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THE JOURNAL AND THE PROFESSION

SOME MEMORIES

BY

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Somewhere in *The Republic* Plato says that he loved to talk with old folk. Dr. Horner, the present Editor of the *Journal*, appears to share the sentiment. He asks me to send him a contribution to celebrate the Centenary of the paper on the ground that I must have known personally more Editors than anyone now living. I comply with very great pleasure, for those with whom I was acquainted are well worthy of commemoration. The first was Jonathan Hutchinson, whom we had known from the time when he and my mother had been together as boy and girl at a Quaker school in Yorkshire. I became one of Ernest Hart's "young men" on the recommendation of Ray Lankester, my tutor at Exeter College, Oxford. Dawson Williams was a colleague at the Children's Hospital in Tite Street, Chelsea, before he abandoned the practice of his profession for medical journalism. With him comes to my mind the memory of Charles Louis Taylor, the friend of us all. Taylor combined culture with his genius for friendship, and to him the *Journal* owes the introduction of a series called "Archaeologia Medica," until it became "Nova et Vetera": short articles dealing in an attractive form with the lives and works of the great English medical men of past times.

Position and Influence of the Journal

Looking backwards I see how greatly the position and influence of the *Journal* have depended upon these successive Editors, though it has never departed from its fundamental position as the representative organ of the medical man in general practice. It had less authority when Hutchinson was Editor and the circulation was much smaller, because he was too busy to devote sufficient time to the onerous and not wholly congenial duties of editorship. Ernest Hart returned to office with renewed energy after two years' absence. His efforts for social reform, his pitiless exposure of abuses in the body politic, and his various crusades attracted attention, led to an increase in circulation of the *Journal*, and enlarged each issue from twenty-four to sixty-four pages. But his zeal was not always tempered with discretion, and he alienated as well as attracted some of the readers. During the later years of his life he was much abroad, and the reins of government passed into the hands of Dawson Williams, who was at first Subeditor, afterwards Assistant Editor, and finally Editor. Williams was a sturdy, clear-headed Yorkshireman. The *Journal* under his guidance continued to interest the general practitioner, but became more scientific to meet the advances needed by medical men as the result of their better education.

Changes in Medical Training

And what of the medical profession itself of which the *British Medical Journal* is the mouthpiece? It has changed in every respect even in my own lifetime. The students are wholly different; the teaching is better and wider; the outlook is more extensive and the opportunities are far greater than they were sixty or seventy years ago. The apprenticeship system had disappeared some twenty years earlier, but its seeds still remained for at least another generation. Boys came to London fresh from schools in country villages. The metropolis was a novelty and a great adventure. Billiards were associated with the public house; Cremorne and Highbury Barn still existed, and the music-hall entertainment was of a low standard. There were many temptations. Some students fell by the way; others became "chronics" and never passed examinations, while others with a little more knowledge became "unqualified assistants" to a doctor who called once a week to collect the threepenny pieces and sixpences paid by patients he had never seen. The great majority, however, succeeded in obtaining a qualification, returned home, and in due course won the respect and good will of their fellow citizens, for they had proved themselves honest, capable, and often good sportsmen.

To minimize some of the perils of the student career a system of resident pupils had grown up at the schools of medicine in London. The junior members, who hoped to come on to the staff of their hospitals, were usually impecunious. They had married young and happily, and for a sum of £126 paid yearly in three instalments undertook to house, feed, and coach some of the students from their own hospital. We, like my predecessors, had six of them for some years. Some more than usual breach of discipline once led my exasperated wife to tell them, "Individually I like you; collectively I hate you." Most of them did well, and so long as they lived they remained our friends.

The teaching in those days was much simpler than it is now. Anatomy was the major subject; physiology—theoretical rather than experimental—was of secondary importance; there were lectures on midwifery but there was no practical teaching, and there was, of course, no gynaecology. Medicine and surgery were learnt thoroughly and practically at the bedside. The student

was brought early into direct contact with the patient, though the actual teaching was done by the house-physician and house-surgeon, rarely by the physician or surgeon himself. The clinical teaching was supplemented by compulsory lectures, which I found dull and uninspiring. They were too often given by those who had no power of exposition, and I had just been taught by T. H. Huxley and E. Ray Lankester, who were such masters of the art as to compel and interest every one of their listeners. Pathology was still the morbid anatomy of the dead-house. Bacteriology was non-existent, and there was, of course, no inkling of biochemistry. With the exception of the eye, diseases of the throat, ear, and deformities were still in the hands of the assistant physicians and surgeons, who looked upon their departments as stepping-stones to still higher positions.

Professional Outlook and Outlets

The profession was insular and isolated. Few hospital physicians and surgeons and still fewer general practitioners had ever been out of England. Local medical societies and book clubs were thought sufficient to keep them abreast of current knowledge. International congresses were indeed just beginning, but friendships with American and European colleagues made and cemented by personal contact had still to come. Medical men were not wealthy, and the cost of travel abroad was prohibitive for those who knew neither French nor German.

There were not many outlets for a medical man seventy years ago. He might enter the Navy, the Army, or, best of all, the Indian Medical Service: he might become an assistant in a mental hospital or join the prison service. As a rule he settled down in his native place and became the highly respected, but ill-paid, doctor with many club patients. By day and by night, in all weathers, he drove in a high dog-cart sheltered by a large umbrella held by his groom. The wise doctor went on horseback. There were no social services to employ his talents; the Colonies offered an opening for the more venturesome, but it was dangerous because little was known about tropical diseases, their cause, prevention, or treatment.

These were the drawbacks and limitations. What advantages have been gained? The medical profession as a whole, like the rest of the nation, is better educated. The entrance examination is stiffer; the fees are higher. The students, therefore, are drawn from a better class than they used to be. Formerly a student was contented to obtain a licence; now he wants a degree. The medical graduates of Oxford, Cambridge, and Durham were very few; now the Bachelors and Doctors of Medicine of the Universities in London and the Provinces are numerous. The course has become longer, the examinations more severe, and only those with ability above the average can hope to qualify in the minimum time. The greater expense is set off to a certain extent by the more numerous money prizes, exhibitions, and scholarships which are open to competition. The newly qualified medical man no longer has to live by his wits if he wishes to reach the higher ranks of his profession, nor to become "an assistant with a view to partnership" should he be content to occupy himself in general practice. A research fellowship will tide over the lean years for the one and a panel practice for the other.

Many approaches to practice now exist which were formerly unknown. One of the first was the appointment of medical officers of health: part-time at first and associated with towns; whole-time afterwards and appointed to counties. Many social services needing trained medical advisers followed, beginning with a few branches, later developing in ever-increasing numbers. New discoveries, too, give additional opportunities for lucrative work—bacteriology, *x* rays, radium, biochemistry, and psychoanalysis amongst the number. The Royal Air Force and an expanded Army need many medical officers, whilst the Colonial Service offers numerous opportunities for a healthy, useful, and interesting life for those who wish to advance scientific knowledge.

The future is bright, promising much both to men and women who enter the medical profession. For women especially there are vast fields waiting to be exploited in India, where the elements of hygiene and child welfare have still to be taught, no less than at home, where the ignorance on such subjects is colossal, although some light is beginning to be shed upon it.

Specialism and Team Work

For ourselves I think that specialism begins too early. The older system at Oxford and Cambridge was to bring the undergraduates together and allow them to mix on equal terms with those who were to take Orders, go to the Bar, become solicitors, or enter on a business career. Now they go at once to the laboratories and concentrate on a wholly scientific training. The result is that they become a class apart and have not taken full advantage of a university training. This is, of course, a rebound from the time when a teacher felt himself competent to lecture on anatomy, physiology, chemistry, and botany. For over a century this has not been possible, and every science is now broken up into a number of parts each of which more than occupies the attention of a single man. The result for the recently qualified is that more resident posts are open to him at the numerous special hospitals. The doctor no longer thinks that he is competent to anaesthetize, operate, deliver, or diagnose a deep-seated tumour of the brain. There has arisen a system of team work which is equally advantageous to doctor and patient. The partners in a firm work together, and the closer association brings about a spirit of friendliness and neighbourliness which has done much to kill the suspicion and hatred which sometimes spoilt the lives of competitive practitioners in small English towns. This is all to the good; it is quite a recent development, and is due in part to the establishment of small local hospitals. May they continue to increase and multiply.

Much more might be told from personal memory: of the conversion of nursing from a calling to a profession; of the changes which put an end to operations at home in favour of nursing homes and cottage hospitals; of the lingering terror of salivation if mercury was mentioned. All now are things of the past, though they are still worthy to be remembered. Space forbids, and, like the story of Chaucer's "Cambuscans bold," they must be left untold.

H. Yaoi, S. Hirase, and Y. Sudzoki (*Paris méd.*, 1940, **1**, 79) record their observations on 174 recruits aged from 18 to 25, whom they classify in two groups in respect of their agglutination titre to the typhoid bacillus. Of the first, consisting of seventy-four persons, fifty who showed an agglutination titre ranging from 1:25 to 1:100 were inoculated with 0.9 c.cm. of anti-typhoid vaccine alone, and on the fifteenth day showed an agglutination titre ranging from 1:200 to 1:400, while on the twenty-second day sixty-nine serums were positive in 1:800 and forty-two in 1:600. The Widal reaction was also examined in a few cases of the first group on the seventy-fifth day, and five were positive in 1:400 or 1:800. In the second group, consisting of 100 persons who were inoculated with combined anti-typhoid vaccine and refined anti-small-pox vaccine, the agglutination titre was on the average four times as high after the use of the two vaccines as after the anti-typhoid vaccine alone, and after seventy-five days it was much higher.

CEREBROSPINAL FEVER

ANALYSIS OF 124 CASES

BY

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The cases herein analysed were admitted to the Military Isolation Hospital, Aldershot, during the winter of 1939 to the end of May, 1940. The type of case seen in this period appeared to show some clinical deviations from the normal as exhibited in the war of 1914–18 and it was thought worth while to analyse the cases and report on the treatment with soluseptasine by the intravenous route.

Onset and Incidence

The onset of the fever was very sudden. Many went to bed feeling quite well and awoke in the morning with intense headache, frequently accompanied with vomiting. The actual incubation period cannot be definitely stated, but it appears to be of very short duration, mostly from twenty-four to forty-eight hours. Some cases, however, had various symptoms, especially sore throat, lasting from one to seven days before the appearance of the headache. Others complained of a feeling of general malaise for a similar period of time. The fulminating septicaemic type is even more sudden than this. A man may be stricken to the ground in a fit simulating petit mal, others suddenly become unconscious and fall into various stages of coma. The following tables show the incidence according to age, length of service, and date of occurrence.

Age Incidence

Age (yrs.)	Cases	Age (yrs.)	Cases
¼	1	25	2
14	1	26	2
15	1	27	2
16	1	28	1
17	1	29	3
18	4	32	2
19	18	36	1
20	26	38	1
21	29	40	1
22	14	43	1
23	7	44	1
24	3	51	1

Service Incidence

Period	Cases	Period	Cases
1 wk.	1	9 mths.	2
2 wks.	1	10 „	2
3 „	8	11 „	5
1 mth.	4	1 yr.	4
2 mths.	4	2 yrs.	1
3 „	12	4 „	1
4 „	18	6 „	1
5 „	16	7 „	1
6 „	24	10 „	1
7 „	14	25 „	1
8 „	3		

Time Incidence

Week ending	No. of Cases Admitted	Week ending	No. of Cases Admitted
11/11/39	1	17/3/40	2
18/11/39	1	24/3/40	8
23/12/39	4	31/3/40	4
7/1/40	2	7/4/40	5
14/1/40	3	14/4/40	9
21/1/40	12	21/4/40	3
28/1/40	8	28/4/40	2
4/2/40	8	5/5/40	2
11/2/40	14	12/5/40	3
18/2/40	7	19/5/40	2
25/2/40	7	26/5/40	4
3/3/40	8		
10/3/40	5		124

The types of cases were classified as slight, 28; moderate, 49; severe, 41; fulminating septicaemic, 6.

Signs and Symptoms

The clinical picture was that of an extremely ill patient with the anxious expression of one in distressing pain. The lips and cheeks were pale and grey, showing a definite toxaemia with much blood destruction, leading in the worst cases to an apparently moribund state. The skin was damp with perspiration. The commonest and most distressing symptom was that of intense and intolerable headache. On approaching the bedside or stretcher one was frequently met with an urgent appeal for something to relieve the headache, which the patients said they could not stand any longer—one man actually asked for a razor with which to cut his throat. This symptom was so constant and distressing that one could almost diagnose the case on that alone, and perform an immediate lumbar puncture in confidence of finding a turbid cerebrospinal fluid under pressure. The removal of anything from 30 to 50 c.cm. of fluid would relieve the distressed condition immediately.

The next important sign was that of nuchal rigidity with intense pain on attempting to approximate the chin to the chest. This was noted in 116 cases, and 34 of them were described as having "marked rigidity." Retraction of the head was absent in 42, and only 5 showed anything like marked retraction. No condition of opisthotonos as described was seen in any case. Vomiting was fairly constant and sometimes appeared as quite an early sign contemporaneous with the headache. This was noted in 56 cases, being severe and prolonged in 24. Strange to report, we had a number of bad and persistent vomiters, all admitted in one week in April. Nothing was discovered to account for this. The vomiting generally lasted from one to four days. During this stage soluseptasine was found to be extremely valuable.

The mental condition of the patient was very often abnormal. Two definitely distinct types existed. One type had considerable cerebral irritation. My notes show that 2 patients were very violent and required constant and forcible restraint, 4 were noisy, 13 rambling and delirious, 10 irrational and disorientated. The other type showed varying degrees of mental depression and were very sorry for themselves: 4 were unconscious in coma; 37 were stuporous, confused, and lethargic; 11 were just drowsy and apathetic. Fifteen patients were conscious and rational, and 2 were actually mentally alert. The 4 cases in coma were *in extremis*, collapsed, with cold extremities, and very cyanosed and practically pulseless. They all recovered.

The temperature was no guide in establishing a prognosis or a conception of the severity of the case. Only 3 cases had a temperature of 103° on admission; 102 cases were below 100°, and in 64 the temperature was not above 99°. The pulse rate was almost like a temperature chart and much more indicative of the severity of the infection, and in its charted rate was more informative of the progress of the case than the temperature chart. A slow pulse rate was evident only in cases of increased pressure of the cerebrospinal fluid or in full dosage of the sulphonamide drug used. The volume was noted as "poor" in 28 cases, but hard in 17. The reflexes were not very valuable from the point of view of diagnosis—for example, Kernig's sign was noted as doubtful or absent in 47 cases, knee-jerks were absent in only 18 cases, sluggish in 24, and exaggerated in 7. Brudzinski's sign was present in only 8 cases. Plantar reflexes were: 5 flexor, 42 extensor. Ankle clonus was present in 4 cases. Respirations were a little altered from the normal. Purpuric and petechial rashes on the trunk and limbs were present in 28 cases; 2 extremely severe cases had extensive areas of haemorrhagic purpura; and 24 had the "spotted fever" petechiae, 12 of them very extensive and marked.

Joint Signs.—3 patients had rigid spine, 7 had stiffness and pain on manipulation of joints in upper and lower limbs, 7 complained of pain in the back and 2 of abodminal pain, in 1 the jaw was locked, and 9 had their teeth strongly clenched. One patient who was unconscious had his fists strongly clenched and his arms firmly fixed in flexion at the elbows.

Ocular and Auditory Signs.—4 had conjunctivitis, 13 strabismus with diplopia, and 31 a marked photophobia; 2 showed ptosis of one or other eye; 1 developed a severe condition of iridocyclitis and lost the vision of that eye. 2 were deaf on admission and 5 others had a transitory partial deafness.

General Signs.—In fulminating cases all showed meningeal signs; but the predominant clinical picture was one of acute generalized toxaemia, and some were presumably septicaemic in nature. In other cases the clinical picture simulated typhoid with pyrexia and a macular rash: in these one could isolate the meningococcus by blood culture.

Pathology and Bacteriology

The cerebrospinal fluid was turbid in varying degree. Slight turbidity pointed to lumbar puncture having been performed at an early stage of the disease, and often it became more turbid on later lumbar puncture. In some cases the fluid was almost too thick to pass through the needle. Mostly the fluid was under pressure—and in some cases to such a degree that it actually spurted through the needle. In a cell count the polymorphs varied from 2 to 52,600 per c.mm., this maximum being in a soldier's child aged 3 months: 27 had up to 5,000 polymorphs per c.mm., 44 had 10,000, 38 had 20,000, 12 had 30,000, and 3 had over 30,000. A small polymorph count indicates a localized infection, and one not particularly invading the theca.

The globulin was constantly increased in amount; and sugar was decreased, down to total absence: in 16 cases it was normal; in 38 reduced in quantity; and in 70 *nil*. Protein was constantly increased, excepting in cases of a very low polymorph count. Any haemorrhage into the spinal canal, accidental or otherwise, gives a definite increase in amount commensurately with the polymorph cell count. The actual amount shown was: 46 up to 200 mg. per ml., 26 up to 300 mg., 20 up to 400 mg., 25 up to 500 mg., 3 up to 600 mg., 2 up to 700 mg., 1 up to 1,100 mg., and 1 up to 1,200 mg.

Chlorides were constantly diminished, varying between 600 and 700 mg. per ml.

The meningococcus was nearly always found in direct smears, but was scanty or absent in culture in cases with a low polymorph cell count or in cases in which treatment had been started before lumbar puncture was performed. In some cases in which symptomatic reasons necessitated repetition of lumbar puncture within twenty-four to forty-eight hours the laboratory reported an almost normal cerebrospinal fluid. Blood culture showed that 3 cases had normal cerebrospinal fluid, but the meningococcus was isolated in blood culture and in blood films peripherally.

In all cases save one the differential blood count showed a total white cell count varying from 10,000 to a maximum of 52,000 per c.mm. The polymorph percentage was high, varying from 70 to 94. The one case showed a leucopenia. Lymphocytes invariably decreased from normal 30% to as low as 2%. There was no change in eosinophils or myelocytes, and the mononuclear count was not altered to any appreciable extent. This is not of much prognostic value.

Differential Diagnosis.—Cases in which the initial diagnosis of cerebrospinal fever or "suspected cerebrospinal fever" was changed were: influenza, 8; scarlet fever, 1; tonsillitis, 6; pharyngitis, 3; chronic bronchitis and emphysema, 1; acute enterocolitis (infant), 1; rheumatism with rheumatic purpura, 1; acute belladonna poisoning (accidental), 1. Cases of cerebrospinal fever previously diagnosed otherwise were: post-epileptic state, 1; ? diphtheria, 1; early pneumonia, 1.

Course of the Illness

After the initial intravenous injection of soluseptasine, with lumbar puncture, within twenty-four or even twelve hours in the majority of cases the picture was entirely changed. The temperature fell to normal, the intensity of the headache was diminished and in some cases entirely eliminated, nuchal rigidity lessened, and vomiting ceased or lessened in persistence and severity. By this time sulphapyridine is given orally without subsequent vomiting, in diminishing strength of dose, until in eight or nine days treatment is stopped and the patient proceeds to a sustained and uneventful recovery, is allowed up in from thirteen to twenty-one days, and is discharged on five weeks' convalescent leave after four to five weeks' hospital treatment. Vomiting ceased in most cases after the initial dose of soluseptasine and lumbar puncture. In 4 cases it continued for two days, in 9 for three days, and in 7 for four days. The period during which headaches persisted was: three days, 2 cases; five days, 2 cases; six days, 3 cases; seven days, 4 cases; nine days, 4 cases; ten days, 2 cases; twelve days, 1 case; seventeen days, 3 cases; twenty-three days, 1 case. The length of time patients were kept in bed was thirteen days and fifteen days in 1 case each, sixteen in 2 cases, nineteen in 2, twenty in 18, twenty-one in 17, and twenty-four in 12. They were generally up and about all day in four weeks. No physical signs of cerebrospinal fever were present after eight days in 1 case, ten in 2 cases, eighteen in 4, nineteen in twelve, twenty-five in 26, twenty-seven in 5, thirty-two in 7, thirty-six in 10, and thirty-seven in 11.

Post-convalescent Condition.—After five weeks' convalescent leave 25 declared themselves perfectly well and fit; 48 complained of early fatigue on exercise and occasional dizziness; and 6 complained of pain in the back. 42 exhibited the effort syndrome in varying degree of severity: these cases gave only a fair response to the exercise-tolerance test, with some distress. 6 were found unfit for duty at present and were sent to the general hospital for further treatment and final disposal by a medical board; 48 were recommended for a period of light duty under the supervision of a regimental medical officer, and 25 were returned to their unit as "fit for duty." In the examination of these cases and in the decision as to their further disposal consideration was given to the psychological aspect of the situation. The majority of the cases consisted of young militiamen who had unfortunately contracted the infection after a very short period of service; and after four to five weeks' hospitalization followed by five weeks' convalescent leave at home were, as it were, conscripted again, with the ensuing shock to their nervous system. It was decided, and I think reasonably, that after a period of light duty to enable them to settle down once more into military service they would very shortly "make good" as soldiers.

Mortality.—Among the 124 cases there were 4 deaths, which gives a fatality rate of 3.2%. Since the end of May there have been 11 more admissions, and as no other deaths have occurred the total rate is brought down to 2.9%.

Treatment with Sulphonamides

The introduction of the chemotherapeutic agents known as sulphonamides, or sulphanilamide, for the treatment of cerebrospinal meningitis has completely changed the clinical and prognostic pictures of the disease. Whereas it was previously greatly dreaded because of its high mortality figure of 30 to 60%, or even 80% in fulminating cases, this terror has largely been lost, since the mortality rate is reduced by less than 3% in all cases. In pre-sulphonamide days patients remained in hospital for at least six

weeks, with a further six weeks' convalescence, and often were invalided out of the Service. Under the new treatment men have been discharged from hospital in four to five weeks, and after five weeks' convalescence have been returned "fit for duty" or, in some cases, "fit for light duty" under the supervision of the regimental medical officer, being returned to full duty after a short period.

In treatment it is essential to achieve a high concentration of the drug at the earliest possible moment and to maintain this concentration at an effective level over a predetermined period of time to suit the particular case. As soon as a case is even suspected of being one of cerebrospinal meningitis, and even before lumbar puncture is performed, treatment should be begun. There is no doubt that by adhering to this principle many lives are saved.

Sulphonamides can be given by all routes—orally, subcutaneously, intramuscularly, intravenously, or intrathecally. There are three chief drugs in this order of merit: soluseptasine, sulphapyridine, and sulphanilamide.

1. Soluseptasine (M & B 137): disodium para (γ-phenylpropylamine) benzene-sulphonamide-α, γ-disulphonate.—This drug is supplied in ampoules of 5% and 10% solutions for intramuscular or, better still, intravenous injection. Soluseptasine is a sulphonamide with the addition of a benzyl group, which very greatly reduces its toxicity. If the patient is comatose or too ill to take anything by the mouth, or is vomiting, 20 c.cm. of 5% or 10 c.cm. of 10% soluseptasine is injected intravenously into one of the veins over the antecubital fossa. This can be repeated in four to eight hours, according to the severity of the case, and may be continued for three or four days, until the patient's initial signs and symptoms have disappeared. The results are so constantly good and the effects so speedy that this is the drug to be recommended for routine treatment at the outset in all cases except perhaps the mildest. It is certainly preferable to any other form of chemotherapeutic drug that has been produced up to the present time. Further research work is being done in this field. 85% of the cases either at the onset or at some subsequent period were treated by soluseptasine intravenously.

2. *Sulphapyridine* (M & B 693, Dagenan): 2-sulphanilylaminopyridine.—This is made up in the form of compressed tablets for oral administration, each containing 0.5 gramme of active substance. The adult dosage is: initial dose, 3 grammes (six tablets) finely crushed, in milk (or, even better, taken in the tablet uncrushed), followed in six hours by 2 grammes, repeated four-hourly for twenty-four hours, day and night, then reducing to 1½ grammes four-hourly for twenty-four hours; then to 1 gramme at the same intervals for the same period. Later 1 gramme may be given three times daily. If the patient vomits or suffers from nausea give a teaspoonful of sodium bicarbonate in warm water half an hour before the dose is due, or 2 minims of liquor atropinae in water or 2 minims of acidum hydrocyanicum dilutum. It may be necessary to split the dose, giving half the number of tablets two-hourly instead of the full number four-hourly. Sometimes a second lumbar puncture may have to be undertaken to reduce the pressure in the cerebrospinal canal. Treatment should be continued without remission for three to five days after the temperature has fallen and headache has been absent or very mild for a period of nine days.

Sulphapyridine Soluble (Dagenan Sodium).—This is merely the sodium salt of sulphapyridine, and is soluble. It may be introduced intravenously in those patients who cannot take the insoluble form of the drug by mouth or in whom it has been found difficult to obtain an adequate blood concentration by means of oral administration. Each ampoule contains 1 gramme of the drug in 3 c.cm. of diluent; this dose may be given at four-hourly intervals to a total of 4 or 6 grammes, after which it should be possible to continue treatment per oram. Sulphapyridine soluble must be diluted in three or more volumes of normal saline. There are very grave drawbacks to the intramuscular route in the administration of this drug. Unless injected very deeply into the muscle it may give rise to subcutaneous necrosis of tissues with abscess formation and ulceration. Furthermore, intramuscular injection often gives rise to a considerable amount of pain. Attempts have been made to anaesthetize with novocain the whole site of the injection, including the entire track of the needle. Considering the unfailing results and the simple safe operation of injecting the rival drug soluseptasine intravenously, it is difficult to find justification for advocating the use of sulphapyridine soluble.

3. *Sulphanilamide* (synonyms: sulphonamide P, colsulanyde, streptocide, prontosil album): *p*-aminobenzene-sulphonamide.—This preparation is put up in 0.5-gramme tablets. The initial dose is 4 grammes (eight tablets), followed after four hours by a dose of 2 grammes, and the same dose thereafter, four-hourly, day and night, as with sulphapyridine. The tablets should be powdered and taken in milk. If there is no sign of reaction to this treatment the course should be repeated or be changed to soluseptasine. In all cases it is recommended that a change over be made to the oral compound as soon as possible, but, at least with soluseptasine, there need be no hesitation about reverting to the intravenous route should vomiting recur or "gagging" at taking the drug by the mouth. When the meningitis appears to be controlled, as judged by the fall in pulse rate and temperature and the disappearance of clinical signs, the treatment should still be continued in doses of 0.5 gramme three times daily for three to five days, to prevent any chance of relapse.

Often the reaction to treatment, especially in those cases which appear at first sight to be *in extremis*, is truly dramatic, the picture changing completely within twenty-four hours or even overnight. One evening a sergeant was brought in with his fists tightly clenched and elbows so strongly flexed that three orderlies found difficulty in straightening his arms so that an intravenous injection could be given. 20 c.cm. of 5% soluseptasine was administered, and this dose was repeated after four hours. In the morning the patient was quite conscious, and was found actually sitting up in bed.

Another striking case was a man who on admission was practically dead. He looked like a corpse, and smelt like one. He was pulseless and hardly breathing. His body was covered with large patches or areas of purpura. His veins were so collapsed that it was very difficult to gain an entry with the needle, and the blood withdrawn into the syringe was almost black. His life was saved by two doses of soluseptasine, within the first four hours. He was eventually transferred to the Cambridge Hospital for further "tonic" treatment.

Once the diagnosis has been made no further lumbar punctures are performed unless signs of intracranial pressure arise, when the operation can be repeated and the pressure in the cerebrospinal canal registered; also, at this or any subsequent lumbar puncture, the concentration of soluseptasine in the cerebrospinal fluid can be determined. This should be from 4 to 5 mg. per 100 c.cm. for several days after treatment is initiated. Further, the percentage of concentration in the blood itself can be estimated, and future dosage thus decided.

Some cases persist in showing a small rise of temperature for some days after they have obviously reacted satisfactorily to treatment. This need give rise to no apprehension, for the temperature will eventually settle down to normal and remain there. Adverse reactions reported in the medical papers, with cyanosis, acidosis, drug fever, dermatitis, dizziness, headache, leucopenia, haematuria, jaundice, neuritis, agranulocytosis, or haemolytic anaemia, are never even seen after repeated doses of soluseptasine, which has been used throughout in cases of initial and persistent vomiting lasting for two or even four days.

With drug treatment some further important matters require attention. Where persistent vomiting occurs, whether due to the meningitis or to the drug, the patient rapidly becomes dehydrated, and fluids so lost must be

made good so that a satisfactory balance may be maintained between blood concentration and ordinary excretion. To establish this approximately four pints of fluid should be taken daily. With sulphapyridine some clinicians have found jagged arrow-shaped crystals in the urine, with haematuria, pyelitis, and other signs of renal damage.

It is important, further, to see that the diet offered contains no sulphur; for instance, eggs are dangerous, as are other foods with a high sulphur content. For a similar reason magnesium sulphate and other sulphur-containing drugs are contraindicated. A good laxative for these patients, who are often constipated, is liquid paraffin or a simple enema. Treat the patient kindly, for a drastic purge may lead to intractable diarrhoea, with consequent dehydration and its unhappy results.

The following rough outline of treatment may be of value when dealing with some of the complications seen after administration of full doses of sulphapyridine:

Cyanosis.—This should not be taken too seriously. Do not withdraw the drug, but see that the diet is sulphur-free. Give 0.5 to 1 gramme of methylene-blue daily.

Retention of Urine.—Catheterize until bladder functions naturally.

Insomnia.—Chloral and bromide or pulv. ipecac. co. Paraldehyde or morphine only if urgently required.

Herpes Labialis.—Often seen in patients who have been given sulphapyridine in a crushed form. Soluseptasine ointment has been advocated, but has not proved satisfactory. Other more serious complications such as deafness, iritis or ophthalmia or other intra-ocular infections, synovitis, etc., require the specialist's attention.

From beginning to end a complete record of the treatment must be kept on A.F.I. 1237, giving the date and hour, the drug and dose administered, and the route of entry, and this document or a copy must accompany the patient if he is transferred from one medical unit to another, so that overdosage may be avoided. More particularly is this necessary when the transfer takes place from a small medical unit—for example, a medical reception station—to a general or isolation hospital.

Technique for the Intravenous Injection of Soluseptasine

It is advisable to have one or two orderlies present to steady the patient's arm, especially if he should be restless, resistive, or irrational. Choose the arm which appears to be furnished with the best veins. Extend the arm fully at the elbow. In applying the tourniquet round the upper arm leave one end in a loop instead of pulling it right through; thus when it comes to removing the tourniquet one tug of the free end will loosen the knot.

The soluseptasine (20 c.cm. of 5% or 10 c.cm. of 10%), previously warmed to blood heat, should be ready in the syringe, with all the bubbles of air carefully excluded. Wash the skin over the chosen vein with surgical spirit, penetrate the vein, withdraw a little blood into the syringe, release the tourniquet; then, watching the patient's face, slowly inject the solution. Withdraw the needle, place a thick pad of gauze over the site of puncture, and flex the arm. If the veins fail to fill satisfactorily on applying the tourniquet repeated flexing of the arm at the elbow will bring about the desired result. Should it prove difficult to insert the needle into a vein, another vein should be chosen, perhaps on the other arm, but care should be taken not to "blow up" the vein.

I wish to give full credit to the excellent and untiring professional care and ability shown by the medical and nursing staff of this hospital, and thanks to Lieut.-Colonel Little, O.B.E., the Assistant Director of Pathology, Aldershot Command, who has done all the pathological investigations, and to others for their kind co-operation.

EXAMINATION OF THE HEART IN RECRUITS

BY

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The routine examination by the medical boards of many healthy young men called up for military service has brought into prominence various physical signs and symptoms referable to the heart. These are often slight, but their presence raises questions as to whether they can be ignored or whether they are important enough to justify the rejection of the man as unfit for service or his relegation to an inferior physical category. The following is an attempt to enumerate and to explain these signs and symptoms.

Cases met with in these circumstances can be divided into three groups:

1. The heart is normal in size and shape when examined radiologically; no symptoms are present, but minor variations in the heart sounds cause suspicion of disease.

2. The heart is normal clinically and radiologically, but the history or symptoms suggest present or potential effort syndrome or neuro-circulatory asthenia. These, if passed for full active service, are likely to break down and to become a prolonged and severe charge upon the community and upon themselves. An attempt should be made to pass the slighter cases for clerical or other non-violent work, or to find them official work similar to that which occupies them in civil life.

3. Exercise tolerance is normal, but physical abnormalities of the heart, either congenital or acquired, are detected. The diagnosis of the commoner congenital abnormalities is described and an attempt is made to indicate the manner of dealing with the organic cases.

I. The Normal Heart without Symptoms

Excitable young adults at the time of a medical examination often have an excessive sympathetic tone, presumably largely due to an increased output of adrenaline. One result of this is a transient glycosuria, but other manifestations are found in the cardiovascular system. The heart rate is increased, often up to 120 or more. The muscular thrust of the apex of the left ventricle is abnormally vigorous. This produces several physical signs, each of which may suggest a cardiac abnormality. On inspection the impulse extends into two or more spaces and may be visible in the epigastrium. On palpation a false impression of enlargement may be obtained in the following way: The vigorous impact is transmitted by the rib to a point outside the true apex beat; therefore when the hand is placed over a rib rather than in a soft interspace a false conclusion is arrived at. In determining the point furthest to the left and furthest downwards where the heart action is felt great care must be taken in these cases to locate it with the finger-tips in the soft interspace.

Another abnormality produced by overaction of the normal heart is an impurity of the first sound. This change may be so definite as to suggest a short presystolic murmur. The chief points upon which to fix the attention are the pitch of the sound and the absence of any early sound in diastole. In mitral stenosis the pitch is high, like that of a drum stretched tight, but here the pitch is low, like that of a looser and more booming drum. Moreover, in the vast majority of cases of mitral stenosis a mid-diastolic murmur is audible after exercise with the patient lying on his left side.

An associated nervous increase in the blood pressure is found in some of these cases. The increase is presumably due chiefly to increased output, and thus,

although the systolic reading is temporarily raised even above 170, the diastolic is little if at all changed. No cardiac enlargement is present in these cases of transitory nervous spasmodic hyperpiesis, and subsequent readings with the patient at rest show progressively lower readings.

In some hearts, normal in size, shape, and function, a third heart sound is audible at the apex in mid-diastole. This has to be differentiated from early mitral stenosis, from early heart-block, and, if some doubt as to timing exists, from a bundle-branch defect. This third heart sound is a normal phenomenon. It varies with respiration, being loudest in expiration or in very early inspiration, and it is associated with a normal low-pitched first sound. It is commoner with a low heart rate and disappears in tachycardia. In early mitral stenosis, on the other hand, exercise is likely to accentuate the diastolic murmur and even to bring out a hitherto latent presystolic murmur. Moreover, radiological screening examination, which is essential in these doubtful cases, will nearly always show more or less cardiac enlargement if mitral stenosis is present, particularly of the conus pulmonalis and of the auricles, and, in the right lateral position, a backward displacement of the oesophageal barium shadow due to enlargement posteriorly of the left auricle.

Early heart-block is seen sometimes in patients who are now healthy but who sustained rheumatic disease of the bundle of His at some previous time. No beats are dropped, but the prolongation of the auriculo-ventricular interval dissociates slightly the auricular from the ventricular systole. Here the auricular contraction may be audible in late diastole. This condition is rarely found in young adults except in conjunction with other stigmata of rheumatism, such as cardiac enlargement or mitral disease. Its presence proved electrocardiographically would necessitate a very careful review of the individual case. A congenital abnormality of the branches of the bundle of His occurs rarely. Here there may be a reduplication of the first sound. Accurate diagnosis is impossible except by electrocardiograph tracings. In most cases it is possible, by timing the heart sounds with the carotid or with the apex beat, to prove that the reduplication involves the first and not the second sound. If these patients enjoy a normal exercise tolerance and have no symptoms, and if there is no enlargement of the heart, the congenital bundle-branch defect can be ignored.

In addition to these variations in normal heart sounds certain murmurs or adventitious sounds may cause difficulties in diagnosis. Systolic murmurs of various types are the commonest of these. The statements that follow refer to systolic murmurs which do not have the easily recognizable characteristics of classical mitral regurgitation, aortic stenosis, patent ductus arteriosus, intraventricular septal defect, or pulmonary stenosis. They refer to murmurs which are localized or which have unusual directions of conduction.

The best tests of the organic basis of a systolic murmur, whether the underlying lesion be congenital or acquired, are the effects of posture and of respiration. If a systolic murmur is entirely absent in the erect position it is unlikely to be organic. If it is present only in the erect position it is almost certainly functional in type. Again, if a murmur is completely absent at certain phases of respiration, most usually full inspiration, it is unlikely to have an organic basis. The cardio-inspiratory murmur, described later, is a functional murmur having the opposite characteristic—that is, it is absent during expiration and is heard only during inspiration.

The following are examples of functional murmurs encountered in recruits in whom no other cardiac abnormalities were found.

(i) A soft systolic murmur was audible at the apex and conducted to the pulmonary base. It was absent in the erect position.

(ii) A systolic murmur, rather soft and blowing in character, was heard at the apex. It was conducted out into the axilla and up to the pulmonary base. It was present in the erect but loudest in the recumbent position. But it was audible only during inspiration and was entirely absent during expiration. This was an example of the common cardio-inspiratory murmur often found in thin young adults. The cause is obscure.

(iii) A rather loud systolic murmur was present in the fourth space, to the left of the sternum. It was localized at this point and was absent in the erect position.

(iv) A rather rough systolic murmur was heard at the pulmonary base. This was absent in the recumbent position.

(v) A loud squeaky systolic murmur was present in the fourth left space near the sternum. It was conducted up towards the pulmonary base and half-way into the axilla. It was much louder in the erect position, but was still audible when the patient was lying down. In the latter case, however, it became completely absent during early inspiration for a few cycles. It was far louder during expiration, especially at the end of this. It had the harsh character, almost a friction sound, which has caused the adjective "exocardial" to be applied sometimes to this type of sound.

II. The Normal Heart with Symptoms. Neuro-circulatory Asthenia

This condition is the commonest cause of cardiovascular breakdown under the strain of active service. Since there is usually no clinical evidence of cardiac disease, such as enlargement of the heart or auscultatory abnormality, the detection of cases likely to develop it is difficult. In the majority of cases there is no history of nervous breakdown or of gross psychological disturbance, but the individual is often of a "highly strung," repressed, and reserved type. He is frequently a non-smoker and a non-drinker with unusually fastidious ideas regarding the details of his mode of life. The significant positive findings in the past history of such cases are palpitation, discomfort in the left chest when tired, a tendency to faint, giddiness, undue sweating, and nervousness. A previous history of "a nervous breakdown" is significant when present. On examination the man may be obviously strung up and nervous, and his expression manifests suspicion. He may be abnormally pale from generalized superficial vasoconstriction. There is considerable nervous tachycardia and the action of the heart is forceful and slapping. The exercise-tolerance test is nearly always unsatisfactory: good figures are hardly ever obtained. The resting rate may have been 90, but after running up one flight of stairs the rate rises to 160 or 180, and remains high—at 120, for example—after he has been resting on a couch for five minutes. It must be remembered, however, that many perfectly normal recruits have a considerable nervous tachycardia and even unsatisfactory exercise-tolerance figures, but these normal men have played games with enjoyment or have been employed in heavy physical work without any untoward symptoms whatever. If a careful history reveals this symptomless and satisfactory exercise tolerance the experimental figures can be disregarded.

On physical examination other signs suggesting the presence or the future possibility of the effort syndrome are tenderness to firm palpation over the apex beat or even over the third, fourth, or fifth left intercostal space, and a labile vasomotor system. Signs of the latter can be elicited by taking the pulse and blood pressure lying, and then after the patient has been standing for three minutes. Normal figures would be as follows:

	Lying		Standing
Pulse	72		72
B.P.	120/70		125/72

Figures indicating poor vasomotor control would be:

	Lying		Standing
Pulse	78		100
B.P.	124/76		106/68

The following is a typical case.

A man aged 21, an advertising designer, had always lived a sheltered life. It appeared that he had never had rheumatic infection, but had been in bed for four months with kidney trouble at the age of 10. For the year preceding his examination he had complained of palpitation on exertion, slight discomfort over the left pectoral region, especially if tired, and an increased tendency to sweating and flushing. On examination the heart was found to be normal in size. The first sound was not quite clear, and a classical cardio-inspiratory murmur was audible at the apex and conducted into the left axilla and to the pulmonary base. He was not recommended for active service, but it was stated that if his drawing ability could be of use he could be accepted for a sedentary or partially sedentary post.

III. The Abnormal Heart without Symptoms

The third and final group consists of men who have a physical sign which proves or suggests the presence of organic disease but who, in spite of this, have no symptoms. Many such men are potentially useful in military service, but certain considerations have to be borne in mind. If a man knows that he has a cardiac murmur he has a very useful peg on which to hang imaginary symptoms if he should wish to evade dangerous or unpleasant military duties, or if he should wish in after years to lay claim to a pension. A man with a congenital cardiac defect is a little more liable to the risk of developing a superadded infective endocarditis as a result of prolonged stress, fatigue, and exposure to weather. A man who has once had rheumatic carditis is definitely more liable to a further attack, and even though the first attack has left him with a well-compensated slight valvular defect, there is no guarantee that the second attack will prove so innocuous.

In assessing the suitability of a man for service there are therefore two possible points of view: either no risk at all is taken and every man with an organic lesion, congenital or acquired, is rejected, or an attempt is made to ensure that such men when accepted for service will not be exposed to the factors likely to be dangerous to them individually. In the former case the country may be saved some money in pensions, but in the latter case it will be strengthened by useful man-power of which it would otherwise be deprived.

The physical signs of acquired heart disease need no description here. But congenital heart disease is so comparatively rare that the signs of the commoner varieties of the non-cyanotic group are recapitulated. Congenital disease with cyanosis and clubbing is so obvious that cases will be rejected on the most cursory examination.

There are two congenital lesions which produce definite signs, but which usually occur without symptoms and which may cause difficulties in diagnosis. These are patent ductus arteriosus and patent interventricular septum. Patent ductus arteriosus produces a flow of blood from the aorta to the pulmonary artery which is greatest during systole but which extends into diastole. In proportion to its degree this causes more or less of a leak from the arterial system, so that, as in aortic regurgitation, there are found excessive arterial pulsation, a lowered diastolic pressure, and some hypertrophy of the left ventricle. The signs are as follows. A systolic murmur, often with systolic thrill, is heard loudest in the second and third left spaces near the sternum. In some cases this murmur is prolonged into diastole and in a few cases it is a continuous murmur with a systolic reinforcement. Left ventricular enlargement is present in proportion to the extent of the lesion, as is a lowering of the diastolic pressure. Radiological examination shows a typically prominent pulmonary conus and pulmonary artery.

Patency of the interventricular septum is shown by a systolic murmur, harsh in character, often accompanied by a thrill, and heard loudest in the fourth space near the sternum. This is present in all postures and at all phases of respiration. Clinical enlargement of the left ventricle is absent if the lesion is slight, but in severe cases it is present. Radiologically, in the latter cases the enlargement of the heart is general.

The following are brief descriptions of cases illustrating these points.

Case 1.—A man who had always been well and who had played vigorous games was found to have a systolic thrill and a systolic murmur, best detected in the fourth left space near the sternum. The murmur was so loud that it was conducted radially from this area, being audible half-way into the axilla and up to the pulmonary base. It was present in all phases of respiration. There was no cardiac enlargement. The cause was a small interventricular septal defect. The past history was so good and the general and cardiac health was so satisfactory that he was recommended for full service. Had the left ventricle shown definite compensatory hypertrophy this would have proved that the lesion was a considerable one. In such a case it would be unwise to expose the man to the full stress of service in the ranks. But even so, if a more sheltered Army job were available he could be passed for it. For example, he could safely be drafted as doctor to the R.A.M.C. or as a surveyor into the artillery, or as a clerk into the quartermaster's department.

Case 2.—A man who had always felt well, and who had played Rugby football until the last season, was found to have a systolic murmur and thrill in the second and third left spaces near the sternum. The systolic murmur was prolonged into diastole after the second sound. It was well localized. The apex beat was in the left mid-clavicular line in the fifth space. The murmur and the thrill were typical of a patent ductus arteriosus. Since there was no cardiac enlargement, and since the diastolic blood pressure was not lowered (130/70), it was clear that the leak was insignificant. He was therefore recommended for normal service. With a greater lesion there would have been an appreciable escape of blood during diastole from the aorta through the patent ductus to the pulmonary artery. This would produce changes analogous to those caused by aortic regurgitation, though usually less in degree. Thus left ventricular hypertrophy would be found, there would be an increased pulse pressure with a lowered diastolic reading, such as 150/60, and increased arterial pulsation would be seen. In such circumstances exposure to the full rigours of service in the ranks is inadvisable. These congenital defects do not cause heart failure, but they provide a nidus for an infective endocarditis, a condition found in the last war in susceptible soldiers on active service.

Organic Valvular Disease without Symptoms

The following were cases of organic valvular disease discovered in the course of examination in men who had not complained of any cardiac symptom. Mitral stenosis appears to be found less frequently in apparently fit men than aortic disease, for in the latter case the burden falls upon the left ventricle, which chamber is best adapted to meet the added burden of the lesion.

Case 3.—A man who had played football until eighteen months previous to examination had suffered from an attack of rheumatic fever nine years before. He felt well and had no symptoms. On examination the apex beat was half an inch to the left of the mid-clavicular line in the fifth space. When the patient was standing the heart sounds were normal except for a rather high-pitched first sound at the apex. When

he was lying this sound was higher in pitch and accentuated. A systolic murmur was present but not conducted, and also a mid-diastolic murmur localized to the apex. This was especially obvious after exertion. A well-compensated slight mitral stenosis was therefore present. This man would be unfit for any service exposing him to physical stress. In special circumstances he might be available for clerical or other fairly sedentary work. But any recrudescence of the active rheumatism might result in a heavy pensions liability to the country; for the subsequent illness might well be prolonged, with remissions, for fifteen to twenty years.

Case 4.—A man aged 32, 6 ft. 4 in. in height and well built in proportion, was found to have the murmur of aortic regurgitation. He had always been healthy, and had played games normally at school. On examination the presence of aortic regurgitation was confirmed, but the associated leak was insignificant. This was proved by two facts: first, the diastolic pressure was not lowered (126/72); secondly, there was little cardiac enlargement, the apex beat being in the fifth space and the orthodiagraphic diameter of the heart being only about 1 cm. above normal. This man had the definite promise of a surveying job in the artillery, for which he was fitted by his civil experience. He was therefore passed as fit.

Case 5.—A man aged 24 had had rheumatic fever two years previously. Since then he had worked as a coal-miner and had remained free from symptoms. On examination aortic regurgitation was found. Here again there was no significant leak, the blood pressure being normal (138/70) and the apex beat being in the fifth space in the mid-clavicular line. This man was rejected; for the risk of a second attack of acute rheumatism was greater since the first had been so recent, and he had no special qualifications which would enable him to be useful in a more sheltered job. Life in the ranks with exposure to weather and physical fatigue would provide too great a risk of another attack of acute rheumatism.

Case 6.—A man aged 26 had suffered from acute rheumatism at the age of 11. Since then he had been well, his recent work entailing heavy lifting in a timber yard. He had played games until the time of examination. He was found to have some hypertrophy of the left ventricle, the apex beat being forcible and just external to the mid-clavicular line. A systolic thrill was felt at the aortic base, conducted into the vessels of the neck. This was coincident with a similarly conducted harsh systolic murmur, also audible at the apex. An early diastolic murmur was present at the aortic base, and at the apex, indicating some aortic regurgitation. This was slight, for the blood pressure was not changed (152/80). Aortic stenosis was thus the significant lesion. The man was rejected; for, although he had no symptoms at the time, the thickening and calcification of the aortic valve cusps and the neighbouring tissue is progressive, and it is likely to affect the coronary circulation, producing angina of effort or unexpected death, especially after heavy exertion. If the man was likely to be of great use to the military authorities in some physically sheltered and skilled position it might be safe to pass him, but a definite risk would thus be undertaken.

Aids to Diagnosis

Very little mention has been made in the above paragraphs of the use of radiological and electrocardiographic aids to diagnosis. Many cases can be accurately assessed without these, but in all cases of doubt their help is invaluable. The *x*-ray screen is of use especially in the diagnosis of early mitral stenosis and patent ductus arteriosus, and it is an invaluable method of measuring accurately the size of the heart by orthodiagraph. This single observation is the most valuable of all in deciding the presence or absence of organic disease. Although a few exceptions occur, it may be stated that a heart which is not enlarged is organically normal, and, on the contrary, every enlarged heart is organically abnormal. In the examination of healthy young adults the electrocardiograph is more helpful in analysing irregularities than in estimating myocardial changes. Therefore it is of less practical value than the *x*-ray screening apparatus in this particular group of cases.

COLORIMETRIC STANDARDS FOR EMERGENCY ESTIMATIONS OF CERTAIN CONSTITUENTS OF BLOOD AND C.S.F.

BY

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The determination of urea in blood is most easily carried out by conversion of the urea into ammonia by urease, followed by direct Nesslerization; that of non-protein nitrogen (N.P.N.) and plasma proteins by suitable digestion with sulphuric acid, whereby the whole of the contained nitrogen is converted into ammonia, followed by Nesslerization. The resulting yellowish-brown solution is compared with a suitable standard in a Duboscq or photoelectric colorimeter, or in a photometer. Such instruments are not always available to the clinician or to the pathologist working under emergency conditions.

With the purpose of providing a simple means of estimating these substances without the use of elaborate apparatus artificial coloured standards for comparison have been investigated. Such standards should be indistinguishable in day or artificial light from the "Nessler-yellow" colour and should have a fair degree of permanency. To this end attempts have been made, first, to secure permanent suspensions of the yellowish-brown colloid produced with dilute ammonia and Nessler's reagent (these have not been satisfactory); and, secondly, to find a coloured substance or substances exhibiting a yellowish-brown tinge in solution which would appear sufficiently similar to most observers. Of the various substances tried a mixture of ferric chloride and cobalt chloride in hydrochloric acid solution has been the most satisfactory.

In the standards proposed the proportions and amount of ferric chloride and cobalt chloride have been so adjusted that the resultant mixtures have appeared indistinguishable from Nesslerized ammonia solutions in daylight and in artificial light. The comparisons have been made in test-tubes of standard bore (5×5/8 in.) viewed in a comparator block against frosted glass and in a test-tube rack against white paper. A standard ammonium chloride solution containing the equivalent of 0.01 mg. of N per c.cm. was employed as a basis for the comparisons. This solution was used in varying amount with added water and 1 c.cm. of Nessler's reagent in a total volume of 8 c.cm. This is the final volume of test and standard solutions in the micro-methods for blood urea, N.P.N., and plasma protein described by King *et al.* (1937), which are proposed for use with the permanent iron–cobalt standards. The numbers shown in the first column of Table I refer to the amount of nitrogen (mg. N) present as Nesslerized ammonia in the volume of 8 c.cm. which is the equivalent in colour of the stated quantities of iron chloride and cobalt chloride contained in the same volume.

The standard values have been chosen to represent the concentrations most often encountered clinically. They are so spaced as to represent increments of 0.005 or 0.01 mg. N, corresponding to 10 or 20 mg. of urea or N.P.N. per 100 c.cm. of blood. In the lower and middle range the values are spaced more closely in order to allow of more accurate estimation of plasma proteins. For total proteins the increments of 0.005 mg. N correspond to 0.78% protein. By careful matching intermediate values can be

assigned, and it should hence be possible to gauge the concentration of protein to within 0.4%. On the same basis it should be possible to measure fibrin to within 0.02% and albumin to within 0.2%. Since globulin is estimated by the difference between total protein and albumin the error may be additive, and at the most should be 0.6%. For C.S.F. protein the increments of 0.005 mg. N correspond to 6 mg./100 c.cm. of protein, and half-increments to 3 mg.

TABLE I.—*Composition of Permanent Standards*

Standard Value (N equivalent) mg.	c.cm. of Ferric Chloride Solution*	c.cm. of Cobalt Chloride Solution*	0.1N HCl
0.015	1.1	0.15	
0.02	1.4	0.27	
0.025	1.75	0.40	
0.03	2.1	0.55	
0.035	2.4	0.68	
0.04	2.75	0.80	0.1N HCl added to make the volume 8 c.cm.
0.045	3.1	0.93	
0.05	3.4	1.05	
0.055	3.75	1.18	
0.06	4.1	1.30	
0.07	4.7	1.55	
0.08	5.4	1.80	
0.09	5.9	2.10	

* Ferric chloride solution: 10% (w./v.) $FeCl_3.6H_2O$ in 0.1N HCl—i.e., 10 grammes of the salt dissolved in enough N/10 hydrochloric acid to make a final volume of 100 c.cm. Cobalt chloride solution: 10% (w./v.) $CoCl_2.6H_2O$ in 0.1N HCl.

An alternative rapid method for plasma and C.S.F. proteins is also described.

The colour of iodine in ether solution is very much like that of the Nessler yellow. The estimation of sugar by a method in which the final determination is of liberated iodine should make it possible to estimate blood sugar by means of the permanent standards. The Schaffer-Hartman procedure was easily adapted to this purpose. The intensity of the iodine colour is in inverse proportion to the amount of sugar: the more sugar there is present the more iodine will be used to reoxidize cuprous copper; therefore, the lower values in the permanent standards correspond to high sugar values, and the higher standards to low sugar values. The figures for blood sugar obtained in this way are, of course, only rough estimates of the true values, but they are close enough to be of clinical use. In practice it has been found that figures within 10 or 15 mg. of the known values of dilute sugar solutions or the determined values (by an accurate method) of blood filtrates can be obtained.

Haemoglobin is usually estimated by comparing the carboxyhaemoglobin pink colour produced when blood is treated with carbon monoxide or the yellowish-brown colour of acid haematin which is formed when blood is diluted with weak hydrochloric acid. The latter colour is very much like that of the ferric chloride–cobalt chloride standards. The similarity is increased by including a small amount of ferric chloride in the hydrochloric acid with which the blood is treated. The colours are best compared in a comparator block with the tubes placed behind frosted glass. With the procedure described the match is best for amounts of acid haematin corresponding to less than 80% haemoglobin. With larger amounts the colour of the acid haematin solution is somewhat browner than the standards, and the match is correspondingly more difficult. Several observers, however, will usually agree on the value assigned. Results within 5 to 10% of the values by the Haldane procedure are obtained.

Methods of Analysis for Use with Permanent Standards

Blood Urea.—0.2 c.cm. of blood is diluted with 3.2 c.cm. of isotonic sodium sulphate (3% w./v. $Na_2SO_4.10H_2O$). A "knife point" (about 10 mg.) of Jack bean meal or half a urease tablet is added, and the mixture is kept warm for fifteen minutes—e.g., in a 37° bath, a beaker of warm water, or in the waistcoat pocket. The proteins are precipitated by the addition of 0.3 c.cm. each of 10% w./v. zinc sulphate ($ZnSO_4.7H_2O$) solution and of N/2 NaOH. The mixture is centrifuged or filtered and 2 c.cm. of filtrate (≡0.1 c.cm. blood) is treated with 5 c.cm. of water and 1 c.cm. of Nessler's reagent in one of the standard-bore test tubes. The colour is matched with the standards and the figure obtained (mg. N) multiplied by 2,140—i.e., $\frac{100}{0.1} \times 2.14$—to give the mg. urea per 100 c.cm.

C.S.F. urea may be estimated in the same way.

Non-protein Nitrogen.—0.2 c.cm. of blood is added to 3.2 c.cm. of water or isotonic sodium sulphate. 0.6 c.cm. of 25% trichloracetic acid is added*; the mixture is well shaken and is filtered after five minutes. 1 c.cm. of filtrate (≡0.05 c.cm. blood) is heated with 0.2 c.cm. of 50% sulphuric acid (by vol.) until the mixture is brown. (The addition of a small piece of porous pot prevents "bumping.") A drop of 30% hydrogen peroxide is added and the heating is continued for four minutes. 5 c.cm. of water is added, and after thorough mixing 3 c.cm. of Nessler's solution. The figure obtained on matching with the standards is multiplied by 2,000—i.e., $\frac{100}{0.05}$—to give the mg. N.P.N. per 100 c.cm. of blood.

Plasma Total Protein: (1) By Difference with N.P.N.—0.2 c.cm. of plasma or serum is diluted to 10 c.cm. with isotonic sodium sulphate. 0.2 c.cm. of the mixture (≡0.004 c.cm. plasma) is digested with 0.2 c.cm. of 50% sulphuric acid (as in the case of N.P.N.), diluted with 5 c.cm. of water, well shaken, treated with 3 c.cm. of Nessler's solution, and the colour compared. The value (mg. N) is multiplied by 25,000—i.e., $\frac{100}{0.004}$—to obtain the total N per 100 c.cm. The N.P.N. value (as mg./100 c.cm.) is found for the plasma or serum, and is subtracted from the total N/100 c.cm.† The resulting figure is divided by 1,000 and multiplied by 6.25 to obtain the number of grammes of total protein per 100 c.cm.—i.e., the percentage of protein.

(2) *By Precipitation of the Protein.*—0.2 c.cm. of plasma or serum is diluted to 10 c.cm. Of the mixture 0.2 c.cm. (≡0.004 c.cm. plasma) is diluted with 4 c.cm. of water in a pyrex centrifuge tube; 0.1 c.cm. of 10% zinc sulphate and 0.1 c.cm. of N/2 NaOH are added; the mixture is shaken and the precipitated proteins are spun down. The supernatant liquid is decanted off; 0.2 c.cm. of 50% H_2SO_4 and a piece of porous pot are added. The digestion is carried out as described above. The figure (mg. N) obtained on comparing with the standards is multiplied by 156—i.e., $\frac{100}{0.004} \times \frac{6.25}{1,000}$—to obtain the percentage of total protein.

Albumin.—0.2 c.cm. of plasma or serum is diluted to 5 c.cm. with 42% w./v. $Na_2SO_3.7H_2O$. The mixture is filtered after fifteen minutes from the precipitated globulin (Haslewood, 1940; Campbell and Hanna, 1937). 0.2 c.cm. of the filtrate (≡0.008 c.cm. plasma or serum) is treated

* Alternatively, 0.3 c.cm. of 10% sodium tungstate and 0.3 c.cm. of 2/3 N H_2SO_4 may be used for the deproteinization.

† If the mg. of blood urea per 100 c.cm. be already known and be not grossly elevated it will be sufficiently accurate to subtract this figure from the total N instead of performing the plasma N.P.N. estimation. In cases where there is no reason to suspect nitrogen retention the normal average N.P.N. figure for plasma—namely, 25 mg.—may be used.

by either of the procedures for total protein. The following are the calculations entailed:

(1) *By difference with N.P.N.:*

$$\text{mg. albumin N} + \text{N.P.N.} = \text{Reading} \times 12{,}500 \left(\text{i.e., } \frac{100}{0.008}\right)$$

$$\text{mg. albumin N} = (\text{Reading} \times 12{,}500) - \text{N.P.N.}$$

$$\%\ \text{albumin} = \frac{\text{mg. albumin N} \times 6.25}{1{,}000}$$

(2) *By precipitation of the albumin:*

$$\%\ \text{albumin} = \text{Reading} \times 78 \left(\text{i.e., } \frac{100}{0.008} \times \frac{6.25}{1{,}000}\right)$$

Globulin.—Total protein minus albumin.

Fibrin.—0.1 c.cm. of plasma is diluted to 5 c.cm. with isotonic sodium chloride in a narrow tube. 0.1 c.cm. of 2.5% calcium chloride is added. The mixture is left to clot at 37° C. The clot is collected on a thin glass rod; this is transferred to a test tube for digestion with H_2SO_4. The value obtained for the colour on matching with the standards is multiplied by 6.25—i.e., $\frac{100}{0.1} \times \frac{6.25}{1{,}000}$: the result is the percentage of fibrin.

C.S.F. Protein.—0.1 c.cm. of C.S.F. is digested with 0.2 c.cm. of 50% sulphuric acid as in the method for plasma total protein. The value obtained on comparing with the standards is multiplied by 1,000—i.e., $\frac{100}{0.1}$—to give the total mg. N per 100 c.cm. C.S.F. The N.P.N. of the C.S.F. is estimated by digestion and Nesslerization of 1 c.cm. of a 1:10 protein-free filtrate, equivalent to 0.1 c.cm. C.S.F. (0.5 c.cm. of C.S.F. + 3.5 c.cm. of water + 1 c.cm. of 25% trichloracetic acid). The result is multiplied by 1,000 to give the N.P.N. (mg. per 100 c.cm. of C.S.F.). The N.P.N. is subtracted from the total N to give the mg. protein N in 100 c.cm. This figure is multiplied by 6.25 to give the mg. protein per 100 c.cm. C.S.F.

Estimation of Plasma and C.S.F. Protein by the Xanthoproteic Reaction.—When protein solutions are heated with nitric acid a yellow colour is produced. This is intensified by the subsequent addition of excess of alkali. The colour is very similar to that of the permanent standards. Its intensity increases with the amount of protein present, and the relation between colour and amount of protein is almost a straight line. The test is very easy to carry out and constitutes a simple method of estimating protein in solution. The results are in good agreement with those obtained by the H_2SO_4-digestion and Nesslerization procedure. One c.cm. of C.S.F. or of 1 in 20 diluted plasma (for example, 0.5 c.cm. plasma diluted to 10 c.cm. with isotonic sodium chloride or sulphate) is treated with 1 c.cm. of concentrated nitric acid. The mixture is heated rapidly to the boil, cooled immediately, and 2 c.cm. of sodium hydroxide (40%) added. The colour produced is compared with the standards and the protein content derived from Table II.

TABLE II.—*Protein Equivalents of Colorimetric Standards by Xanthoproteic Reaction*

Standards	Mg. Protein per 100 c.cm. C.S.F.	% Protein in Plasma	Standards	Mg. Protein per 100 c.cm. C.S.F.	% Protein in Plasma
0.015	50		0.055	280	5.6
0.020	70		0.06	310	6.2
0.025	95		0.065	340	6.8
0.03	120	2.3	0.07	370	7.4
0.035	150	3.0	0.075	400	8.0
0.04	185	3.7	0.08	430	8.6
0.045	220	4.4	0.09	500	10.0
0.05	250	5.0			

Sugar.—0.2 c.cm. of blood is diluted with 3.2 c.cm. of isotonic sodium sulphate and the proteins precipitated by 0.3 c.cm. of 10% w./v. sodium tungstate and of 7% w./v. copper sulphate ($CuSO_4.5H_2O$). The mixture is centrifuged or filtered, and 2 c.cm. of filtrate is treated with 0.3 c.cm. of Harding's copper reagent (King *et al.*, 1937) in a standard-bore test tube. The tube is heated in a boiling-water bath for ten minutes. It is then cooled and 0.5 c.cm. each of 1% potassium iodide and of normal H_2SO_4 are added. 2 c.cm. of ether* is now added and the mixture well shaken. The iodine will be seen to have gone into the ether layer. The colour is compared with the standards, and the sugar value derived from Table III. If the colour obtained is less than the 0.02 standard the test is repeated with 1 c.cm. of blood filtrate plus 1 c.cm. of water, and the result multiplied by 2. *C.S.F. sugar* may be estimated by the same procedure.

TABLE III.—*Blood-sugar Equivalents of Colorimetric Standards*

Standards	Mg. Glucose/ 100 c.cm.	Standards	Mg. Glucose/ 100 c.cm.
0.02	170	0.055	115
0.025	165	0.06	105
0.03	160	0.065	95
0.035	155	0.07	85
0.04	145	0.08	65
0.045	135	0.09	50
0.05	125		

Haemoglobin.—0.02 c.cm. of blood is mixed with 5 c.cm. of diluting fluid (N/10 HCl containing 1% ferric chloride, $FeCl_3.6H_2O$). The colour is matched with the standards after five minutes.

TABLE IV.—*Haemoglobin Equivalents of Standards*

Standards	% Haemoglobin	Standards	% Haemoglobin
0.02	25	0.04	75
0.025	38	0.045	87
0.03	50	0.05	100
0.035	63		

The percentage of haemoglobin is obtained from Table IV. If the colour is lower than that of the 0.02 standard the procedure should be repeated with 0.04 c.cm. of blood and the result divided by 2. When the percentage of haemoglobin is of the order of 100 difficulty may be experienced by some observers in matching the test with the standards. By adding a further 5 c.cm. of diluting fluid a more dilute acid haematin solution will be obtained and the colour will now be easily matched with the standards; the value assigned is multiplied by 2.

It is recommended that the results relating the standards to percentages of haemoglobin (Table IV) be plotted on graph paper. This will facilitate translation of the standard values assigned to haemoglobin tests, and particularly of intermediate values, into haemoglobin percentage. A straight-line relationship is obtained which cuts the standards axis at a point slightly below that corresponding to a standard containing the same concentration of iron as the diluting fluid.

Summary

Permanent artificial colour standards are described for the estimation of urea, non-protein nitrogen, and proteins. The standards may also be used for the approximate estimation of blood sugar and haemoglobin.

Grateful acknowledgment is made to Drs. D. Beall and J. W. Clegg and to Mr. G. E. Delory for assistance with numerous comparisons between these procedures and those in routine use in this school.

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* It is essential that the ether be peroxide-free; otherwise excess iodine may be liberated from the potassium iodide. The ether may be tested by adding 2 c.cm to a mixture of 2 c.cm. of water, 0.5 c.cm. of potassium iodide, and 0.5 c.cm. of sulphuric acid. If on shaking the mixture no perceptible yellow colour is present in the upper layer the ether is satisfactory for the test. In practice only a very few samples of ether which had been stored in glass for a long time have proved unsatisfactory.

RECENT ADVANCES IN TREATMENT OF GONORRHOEA

BY

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Before considering the effects of adjuvant sulphonamide therapy it is of advantage to recall the position before the introduction of these drugs. Since, also, the object of treatment is to attain cure as rapidly as possible, it is necessary to show to what extent the period of time taken has been shortened, first, with the introduction of uleron, and, later, of sulphapyridine (M & B 693).

Different Methods Compared

1. *Irrigation.*—A group of 3,454 men were treated in this clinic by irrigation with 1 in 8,000 potassium permanganate daily, but no sulphonamides. The average time taken to attain cure was *7.44 weeks.* 5.83% developed right, left, or bilateral epididymo-orchitis, and 0.85% developed prostatitis without epididymo-orchitis—a total complication rate of 6.68%. None of this group, which was unselected and serial in time, "relapsed" after being discharged, following the usual provocative and other tests of cure.

2. *Uleron.*—On its introduction uleron was tried at first alone, without irrigation, but I abandoned this in a fortnight on account of obvious non-success. Combined with irrigation as in Treatment 1, however, it gave good results and shortened the time taken to attain cure to *5.28 weeks,* compared with 7.44 weeks with irrigation alone. Two of the 50 men treated in this group developed right epididymo-orchitis. There were no other complications.

3. *Sulphapyridine with Irrigation.*—I have no direct personal experience of the use of sulphapyridine alone, since, having regard to our experience with uleron alone, it was considered inadvisable to adopt this method. Combined with irrigation, however, it still further reduced the time to attain cure to *3.71 weeks.* Clinical appearances were found to be somewhat deceptive because if treatment was discontinued and tests of cure were started too soon a considerable proportion of "breakdowns" occurred. Experience showed that the minimal period of irrigation plus sulphapyridine likely to give 100% cure was approximately as follows: First week: irrigation with 1 in 8,000 potassium permanganate daily plus 0.5 gramme of sulphapyridine three times a day. Second week: irrigation plus 0.25 gramme of sulphapyridine three times a day. Third week: irrigation alone. Treatment was then discontinued, and provocative and other tests were carried out. Though epididymo-orchitis is rare (0.8%) in cases treated according to this scheme, it does occur, however.

Incidentally, two patients who had been treated in other clinics with sulphapyridine only, and who on reporting in this clinic with a purulent gonococcal urethritis were put on irrigation and sulphapyridine, "survived" all tests except the prostatic smear, which was positive. These cases took three months to clear up. We have also found, when epididymo-orchitis has arisen, that 20 c.cm. of 0.25% euflavine intravenously once a week is more effective than the sulphonamides. It is very useful, too, in simple cases of enlarged prostate and in severe urethral stricture when dilatation is difficult or only partly successful.

Limitations of Sulphonamides

The following case shows very clearly the limitations of the sulphonamides.

The patient, a boy aged 13, reported with gonorrhoea and meatal stenosis—the latter making efficient irrigation very difficult. He was put on irrigation with 1 in 8,000 potassium permanganate plus 0.5 gramme of uleron thrice daily for five weeks with little improvement. Treatment was then changed to irrigation plus 0.25 gramme of sulphapyridine three times daily for three weeks without any improvement. I then substituted instillations of argyrol 10% without change. We then reverted to uleron with the addition of vaccine plus irrigation without avail. The condition cleared up, however, with the intravenous injection of 15 c.cm. of 0.25% euflavine twice a week for two weeks. This gave an effect equivalent to a very weak euflavine irrigation—i.e., during micturition.

Despite this case, however, which is an exceptional though interesting one, it is obvious that, used in combination with irrigation, sulphapyridine has achieved a great improvement in the treatment of male gonorrhoea.

Results with Sulphapyridine plus Irrigation

The foregoing combined scheme of Treatment 3 was the one adopted on the introduction of sulphapyridine, and we still use it unchanged in the treatment of male gonorrhoea. It gives uniformly good results, no "relapses," and very seldom indeed causes any toxic symptoms; the complication rate, too, is practically negligible.

The diagnosis in the cases described in this paper was established microscopically, and all were submitted to the same routine provocative and other tests before discharge. These were, in sequence: (1) Provocative vaccine. (2) Instillation of 25% argyrol into urethra: this was retained in the urethra for half an hour by means of a clamp. (3) Urethroscopy. (4) Prostatic "slide" and in some cases culture. All tests were done by me personally. Of these tests undoubtedly the most valuable is the provocative instillation. It restarts the discharge in about 5% of apparent cures. The prostatic smear was positive in about 0.5% of apparent cures. Tests 1 and 3 are of relatively much less value. These tests were naturally all carried out after cessation of treatment. Having "survived" these tests, patients were discharged cured, and *none* reported back as a "relapse" or "return" case.

When it is borne in mind that most general practitioners treat their gonorrhoea patients with sulphapyridine alone, and fail to apply any tests of cure, it is manifest that this abuse of a valuable agent will counterbalance its beneficial effects when scientifically used. This, I think, is at least partly the reason why there has been no marked reduction in the incidence of gonorrhoea. Furthermore, it was noticed that in smears taken in male gonorrhoea cases which had recently been treated in other clinics with sulphapyridine alone (and which incidentally had been reported as cures) the gonococci were practically exclusively intracellular. I could not find any extracellular ones. I think this fact is very significant, since in an untreated male gonorrhoea case the vast majority of the gonococci are extracellular and therefore easily accessible to the sulphonamides. A small minority, however, are intracellular, and protected against attack as it were. I think this explains the dramatic and immediate resolution of signs and symptoms followed later by "relapses" so frequently quoted by workers who employ sulphapyridine without irrigation. In other words, these apparent immediate cures are subsequently "reinfected" by their own intracellular gonococci lying in the urethral crypts. It is obvious that systematic aspiration of these by irrigation, combined with the powerful effect of sulphapyridine on the extracellular gonococci, will bring about a rapid cure. Where this aspirating effect is non-existent—as, for example, in cases of hypospadias with gonococcal infection of the exposed urethral glands—neither sulphapyridine nor uleron, etc., effects a cure even when combined with irrigation.

The condition clears up, however, when the tiny exposed infected ducts are directly instilled—gently—with 25% argyrol or protargol by means of a syringe and a fine blunt needle.

Adult Female Gonorrhoea

Taking adult female gonorrhoea as a whole, our experience is that while the introduction of uleron, sulphapyridine, etc., has considerably reduced the time required to attain cure, the reduction is not nearly so marked as in male gonorrhoea. This was not unexpected, and is probably due to: (1) the greater difficulty in penetrating or aspirating the cervical glands as compared with the relatively efficient aspiration of the urethral glands in the male by irrigation; and (2) the fact that gonococcal invasion of the female cervix is deeper—a considerable proportion of the gonococci being situated intra-epithelially. It is interesting that infected female urethrae clear up rapidly with sulphapyridine.

In the pre-sulphonamide days the average time we took to attain cure in women was *8.42 months;* these were patients who had attended long enough for this desirable object to be achieved. Apart from these we had eight women with gonorrhoea in which 17.5 months' pre-sulphonamide therapy had failed but which was cured later with two "stosses" of uleron combined with "old" routine local therapy—that is, cervical wet swabbing with 3-volume hydrogen peroxide, followed by the insertion of spuman or euflavine styli, retained in the cervical canal by gauze packing. Eight other cases *initially* treated with uleron plus routine local therapy cleared up in 2.5 months.

On the introduction of sulphapyridine we found it more effective than uleron in recent acute infections. In female gonorrhoea our usual practice now is: (*a*) If acute (that is, of anything less than two months' duration) or if there is a flare-up of an old infection, routine local therapy plus sulphapyridine is given. (*b*) If the condition is of more than two months' duration we use routine local therapy plus vaccine plus uleron.

Our experience is that uleron is superior to sulphapyridine in chronic female gonorrhoea, but that the latter is superior in acute cases. Since, however, the great majority of female gonorrhoea cases are chronic—at least in this clinic—it is obvious that uleron has a wider scope of application in gonorrhoea in women. It must also be remembered that we have a considerable number of women still attending whom as yet we have failed to cure despite the use of sulphapyridine, uleron, albucid, plus local therapy, plus vaccines. It is obvious that so far as female chronic gonorrhoea is concerned new and more effective therapeutic agents are required.

Vulvovaginitis in Girls

The 20 patients treated were all infected by a bedmate (18 by the mother, 1 by an aunt, and 1 by the father). The average time taken to attain cure was 8.3 weeks. The treatment used was superficial swabbing of the interlabial area and gentle irrigation of the vagina with 1-volume hydrogen peroxide, and dry swabbing and dusting of the vulva with calamine powder. We cannot compare these results with the effects of sulphapyridine, as we have not had enough cases since the introduction of the sulphonamides.

None of the above cases "relapsed," and we have not found it necessary to use any alternative methods of treatment. The peroxide was neutralized with sodium bicarbonate.

Conclusion

Our experience is that the sulphonamides are very successful when and where the gonococcus is accessible (that is, extracellular), but they are not so successful when it is intracellular—as, for example, in chronic female gonorrhoea. As quite a proportion of gonococci are intracellular it is obvious that in men irrigation, with its aspirating effect on the infected urethral glands, cannot be discarded.

Clinical Memoranda

Osteomyelitis and Pericarditis treated with Sulphathiazole (M & B 760)

We consider the following case to be interesting enough to warrant publication.

Case Report

A female infant aged 15 months, weighing 22 lb., was admitted to the Children's Department of Westminster Hospital with the following history. On May 13, 1940, she had a severe stye on the right eye, and on May 23 she became ill, with a temperature of 101° and higher. On May 26 she was seen by Dr. Coltart of Shortlands, who suspected a deep-seated pneumonia and gave the child 1.5 grammes of sulphapyridine daily for two and a half days, but with no improvement. She was then seen by one of us (D. H. P.), and pericarditis was diagnosed.

On admission she was extremely irritable and cyanosed; the pulse (170) and respirations (85) were rapid. The temperature varied between 101° and 103°. A harsh pericardial rub could be heard over the whole praecordium. The heart was much enlarged clinically, and this was confirmed by radiograph, but the picture did not suggest that a paracentesis was indicated. The child was put into an oxygen tent, in which she was nursed for the next ten days. Forty-eight hours after admission she was given 3 grammes of sulphathiazole (M & B 760) daily with marked improvement, so that in eight days her temperature had subsided, though her pulse rate was still raised. During these days it was noticed that she always lay on her right side with her hips flexed and that she resented extension of the right hip. In addition she developed a painful indurated swelling over the left ankle, which, however, subsided in the course of the next few days. As the pericarditis had improved, radiographs of the hip and ankle were taken; these showed an inflammatory lesion of the head of the right femur, but nothing in the ankle. Mr. Herbert Harding saw the child and made a diagnosis of osteomyelitis of the head of the femur, with an early pathological dislocation of the hip, and thought the swelling on the ankle was a metastatic abscess. A light extension was applied to the hip in order to correct the tendency to dislocation. Further progress was entirely satisfactory, and the patient was on her feet on August 22, twelve weeks from the date of diagnosis of the pericarditis.

Investigations revealed that the tuberculin patch test was negative. The urine showed a faint cloud of albumin, but no cellular deposits, and it was sterile. The white cell count on May 31 was 23,000—polymorphs 60%, lymphocytes 38%, monocytes 2%, no eosinophils; there was a marked shift to the left in the maturity of the polymorphs. Blood cultures on June 4 and 10 were sterile. On June 6 the concentration of sulphathiazole in the blood was 5.94 mg. per 100 c.cm. On June 15 (i.e., four days after the last dose of sulphathiazole) the white cell count was 11,800. The urine was repeatedly examined and was never found to contain any abnormality, except that on two occasions it showed a heavy white crystalline-like deposit, unlike a normal urinary deposit, which was probably an excretion product of sulphathiazole.

Discussion

This case would seem to have been one of osteomyelitis of the head of the right femur complicated by a severe pericarditis. The clinical improvement coincided exactly with the introduction of sulphathiazole. A dramatic recovery occurred in what we assumed to be an otherwise hopeless

case. The completeness of the cure was manifest clinically and was checked by radiographs of the hip and of the cardiac shadow. Although we have no proof of the identity of the infecting organism we assume that *Staph. aureus* was responsible in view of the history of styes and the failure of sulphapyridine to effect an improvement when given in normally adequate dosage. The amount of sulphathiazole was about double the usual sulphapyridine dosage. Tolerance for this drug was good, though the patient took it continuously for ten days—at the rate of 3 grammes a day at the beginning. The white cells fell from 23,000 to 9,000 at the end of the course, but rose in the next four days to 11,800. One precaution taken was to ensure a fluid intake of at least two pints a day to assist excretion of this relatively insoluble drug, and even then the urine became loaded with its products in a solid state.

Children's Department, Westminster Hospital. D. H. PATERSON, M.D., F.R.C.P. A. J. WALKER, M.B., B.S.

Case of Repeated Administration of Pentothal Sodium

The following case seems to be interesting enough to warrant publication.

CASE REPORT

A youth aged 19 was admitted to hospital on February 15, 1940, with acute retention of urine for twelve hours. In 1934 he sustained a crush fracture of the pelvis, with a tear of the neck of the bladder, extravasation of urine, and extraperitoneal suppuration. Traumatic stricture of the urethra was diagnosed in 1935.

On admission he was in great pain and in a shocked condition, not having passed urine for twelve hours. The bladder extended to within a fingerbreadth of the umbilicus. General examination revealed no other abnormality. The blood pressure was 110/70. On February 16 an attempt to pass bougies under gas and oxygen and ether failed. Suprapubic cystotomy was performed.

In the course of the next three weeks the patient had the following operations and anaesthetics:

Date	Operation	Premedication	Anaesthetic	Time
29/2/40	External urethrotomy	Omnopon, 1/3 gr.; scopolamine, 1/150 gr.	Pentothal, 11 c.cm.; gas and oxygen	110 min.
12/3/40	Passing bougies	Omnopon, 1/3 gr.; scopolamine, 1/150 gr.	Pentothal, 18 c.cm.	18 „
13/3/40	„ „	None	„ 14 „	12 „
15/3/40	„ „	Omnopon, 1/3 gr.; scopolamine, 1/150 gr.	„ 6½ „	7 „
18/3/40	„ „	Omnopon, 1/3 gr.; scopolamine, 1/150 gr.	„ 8 „	8 „
20/3/40	„ „	Omnopon, 1/3 gr.; scopolamine, 1/150 gr.	„ 12 „	8 „
21/3/40	„ „	None	„ 8 „	4 „

It will be seen that 77½ c.cm. of pentothal sodium was used for a total anaesthetic period of 167 minutes. During the following two weeks the patient also received two further administrations of the drug, details of which were unfortunately not noted. At no later date has the patient shown signs of any degree of liver damage.

From the above figures the following conclusions are suggested. (1) That the patient may have developed a certain degree of tolerance to the drug. Such tolerance, if any, could only have been manifested during the induction, as no increased difficulty was ever noticed in maintaining a satisfactory level of anaesthesia. (2) That premedication such as that given results in smaller amounts of the drug being used. (3) A basal anaesthetic (for example, gas and oxygen) has the same effect. (4) Premedication, basal anaesthetic, and pentothal sodium result in easily controlled, smooth, and full anaesthesia.

My thanks are due to Mr. E. Stanley Lee, honorary assistant surgeon, Westminster Hospital, for permission to publish this case.

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Reviews

SURGERY OF THE HAND

Surgery of the Hand: Wounds, Infections, and Closed Traumata. A Book for the Practitioner and the Surgeon. By Marc Iselin, M.D. Translated by T. M. J. d'Offay, M.B., Ch.B., F.R.C.S., and Thomas B. Mouat, M.D., Ch.M., F.R.C.S. (Pp. 353; 135 illustrations, including eight plates. 21s.) London: J. and A. Churchill, Ltd. 1940.

For some years Dr. Marc Iselin's book on the surgery of the hand has been a standard product among current French medical textbooks, and now British medicine will be grateful to Messrs. d'Offay and Mouat for making an English translation. The author, prefacing this translation with a note written from the French Field Army in March, 1940, tells us that he has written of only that which he has tried and found effective, and his hope therefore that the book may be helpful to the military medical services may well be fulfilled. The importance of the first operation for an injured hand, so often performed by the young resident, is emphasized. "We always fall back on the importance of the first operation." . . . "A crush of the thumb, operated on at the outset, heals in three weeks; badly treated, it will drag on for six months and cause permanent disability" (p. 105). We are reminded of the time and care that should be exercised in treating hand injuries: "Böhler estimates the time required for the initial operation of a compound fracture of the finger to be two to three hours" (p. 108). Böhler is also quoted as saying, "Is it more important to save the hand of a young workman than to operate for an extensive cancer in an old man? What difference is it to the patient if he is immobilized for six months, whether it is for a compound fracture of the femur or for a crush of the thumb?"

Part of the charm of this book is the frequent reference to examples in the form of cases whose histories are quoted shortly and graphically so as to make interesting what might otherwise be dull and wearisome reading. There is a difference of opinion between Kanavel's classical description of the mid-palmar space limited by a septum along the third metacarpal and what the author regards as the more extensive limits of this space. The book consists of four parts: (1) wounds; (2) infections of the hand; (3) closed traumata—one is tempted to say, Why not injuries?—of the hands and fingers; and (4) assessment of incapacity. The text is clear and the illustrations are good, and it is interesting to notice some excellent line drawings of dislocation of the thumb "after Farabeuf" (pp. 308, 309). It is a singularly complete and very practical monograph which should be widely known to practitioners and surgeons.

SOCIAL ASPECTS OF INHERITANCE

Heredity and Social Problems. By L. L. Burlinghame, Professor of Biology, Stanford University. (Pp. 369. 23s.) London: McGraw-Hill Publishing Company, Ltd. 1940.

For some years, Prof. Burlinghame tells us, he has given a course to students of social science and of biology at Stanford University. The student of social science has thus been instructed in methods and conclusions highly relevant to his subject; the student of biology has been given an insight into the practical human applications of his field and laboratory experience. This course of lectures has now been presented as an excellent and original textbook.

It must be said at once that the least satisfactory part of the book is the preliminary exposition of genetics. This

suffers from being highly conventional and highly condensed, and will probably prove almost unintelligible to anyone not previously acquainted with the subject. It would have been better either to have given a much simplified account, omitting much that has at present no direct human relevance, or else to have confined the volume to practical applications to the social sciences, referring the reader to elementary textbooks for a preliminary grounding in simple genetics. But when the author gets to his real subject-matter there is no further cause for complaint. His sections on inheritance and intelligence are particularly lucid and helpful. His treatment of such questions as differential fertility, race differences, the effect of migration, heredity and mental disease, together with many more, is admirable. He contrives to steer a skilful course between undue recklessness of statement on the one hand and undue caution on the other. The reader will find an absence of prejudice, an objectivity, and a simple weighing of evidence; he will also find that the author is not afraid of plain statements and has resisted any temptation to indulge in too many qualifications and caveats. The consensus of opinion will undoubtedly be that in evaluating the application of genetics to sociology Prof. Burlinghame displays good judgment and common sense.

It is a pity that at the end of the book the author has attempted to reduce some of the most important and complex of human problems to a simple genetical form. The brief chapter on heredity in education and government is distinctly naïve even if it is too sketchy to be seriously misleading. The book begins by being technical to the point of obscurity and ends by being simple almost to the point of silliness; but the great bulk of it is a contribution of excellence and originality, which can be cordially commended to a wider public than that to which it is specifically addressed.

PSYCHONEUROSES IN WARTIME

The Neuroses in War. By Several Authors, under the Editorship of Emanuel Miller, M.A., M.R.C.P., D.P.M. With a concluding chapter by H. Crichton-Miller, M.D., F.R.C.P. (Pp. 250. 10s. 6d. net.) London: Macmillan and Co., Ltd. 1940.

The usual criticism of a book dealing with a specific subject which is made up of a series of essays by different authors is that it is incoherent and lacking in direction. The present volume cannot escape this criticism, but then the subject is incoherent. Dr. Emanuel Miller has tried to present all aspects of experience of psychoneuroses of the last war for the benefit of those who will have to deal with these conditions both in the Services and among the civilian population during the present war. The first chapter, in which the literature is surveyed, shows how difficult this task is. It is admirably done, but it is a remarkable record of diversity of opinion and method, and the neophyte may be excused if he feels that he has asked for the bread of knowledge and been given a stone. Later chapters, however, show that a considerable advance has been made in the understanding and treatment of the psychoneuroses during the twenty years of peace.

It is rightly stressed throughout the book that war and peace psychoneuroses, while fundamentally similar, are by no means identical, for the war case is directly concerned with the instinct of self-preservation and is acute, simple, and direct. The peacetime form of the illness, on the other hand, is seldom concerned with this instinct in the same direct and obvious way, and it is slow in its genesis and involved and complex in its structure. It follows from this that treatment can also be simpler, more direct, and more rapid for war patients than in peacetime. All are agreed (1) that the sooner the patient can be got to treatment the more rapid and the more successful will be the outcome; (2) that simple direct methods of treatment such as suggestion with or without hypnosis, persuasion hypno-analysis, or narco-analysis are much more successful than in peacetime cases; and (3) that under the strain of war all sorts of people may and do suffer from psychoneuroses, and the patients do not confine themselves to types in the same way as happens in peacetime.

The present war is so different from the last that it will be interesting when a volume comes to be written on the psychoneuroses of this war to compare it with the book now under review, but the future authors will be well advised to study Dr. Miller's collection of essays with great care.

GREEN'S PATHOLOGY

Green's Manual of Pathology. Sixteenth edition. Revised and enlarged by H. W. C. Vines, M.A., M.D. (Pp. 1,166; 701 illustrations. 31s. 6d.) London: Baillière, Tindall and Cox. 1940.

The well-known textbook still described as *Green's Manual of Pathology* has appeared in its sixteenth edition, which is the work of Dr. H. W. C. Vines. In the successive transmutations which this book has undergone little has remained unaltered except its title, and the present edition has gone further than perhaps any other in bringing the work thoroughly up to date and in according it orthodox form and arrangement. The chapters on bacteria and parasites have now finally disappeared, their place being taken by an account of the more important specific infections; among these tuberculosis and to a less extent syphilis are naturally treated at considerable length, while others are described only briefly. New features which typify the modernity of outlook of this edition are the adoption of the new concept of the reticuloses, a clear statement of the present position in the experimental study of malignant tumours, and a discussion of the relation between bacterial allergy and immunity. The unfamiliar appearance of the book is due to the use of a large number of new illustrations, most of which serve their purpose well, though some of the photomicrographs, and indeed a few of the photographs of gross specimens, will not convey all that they might to the uninstructed eye. The author laments the necessity for including so much detail in modern works on pathology, and considers that "it would be wiser if students were taught less and were taught it more thoroughly." He is actually more successful in the chapters on special pathology than in those dealing with general pathological processes, and the more thoughtful and leisurely dealing with fundamentals which he evidently has in mind is an aim to which future editions might well be directed.

ENDOCRINOLOGY

Recent Advances in Endocrinology. By A. T. Cameron, M.A., D.Sc., F.I.C., F.R.C.S. Fourth edition. (Pp. 432; 67 figures, including 3 plates. 18s.) London: J. and A. Churchill. 1940.

A medical book which reaches its fourth edition within seven years evidently stands in little need of praise from us. It will suffice to call attention to the fresh matter incorporated in this new one. The endocrine control of reproduction is presented very fully, and the chapter dealing with the pituitary includes a critical inquiry into the arguments now adduced in favour of a smaller rather than a greater number of hormones it produces. The author agrees with Collip that the functioning cells may in reality only produce two or three hormones which by combination or simple chemical changes produce all the effects observed, many of the substances isolated in the laboratory being merely artefacts. New advances are reported in the preparation of synthetic iodo-proteins having a thyroid activity, the proved benefit of A.T.10 in hypoparathyroid-

ism, and the therapeutic use of implants of crystalline tablets of insoluble hormones. Hanson's remarkable results in stimulating precocious growth and development in rats with thymus extracts have now been shown to be due to glutathione. The close chemical relation of the active principle of the adrenal cortex to progesterone has been established. The whole book has been thoroughly revised, and it remains one of the most useful of all the textbooks of endocrinology.

EXPERIMENTAL PHARMACOLOGY

Experimental Pharmacology and Materia Medica. By Dennis E. Jackson, Ph.D., M.D. Second edition. (Pp. 906. 50s. net.) London: Henry Kimpton. 1939.

The second edition of Prof. Jackson's book will be very welcome to those working on mammalian physiology and pharmacology. The first edition appeared twenty years ago, and its excellent illustrations made it a valuable laboratory manual. The new edition is greatly enlarged (906 pages, 892 illustrations, and 55 coloured plates). Its special features are the numerous and excellent pictures of apparatus and dissections. Fully illustrated descriptions are given of all the common mammalian experiments and also of certain less familiar experiments devised by the author.

A short second part of the volume provides condensed instructions in laboratory techniques which will be found extremely useful in all laboratories that put together much of their own apparatus. The last section deals with materia medica and prescription writing; the most noteworthy feature of this section is the inclusion of attractive coloured pictures of certain medicinal plants.

The book is intended as a guide for the student, but, since the law in Great Britain would forbid most of the experiments described being performed by them, it is scarcely suitable for use by undergraduates on this side of the Atlantic. Research workers interested in mammalian experiments will, however, find this second edition even more valuable than the first.

Notes on Books

The advances of modern chemotherapy are reflected in many sections of the thoroughly revised third edition of *Diseases of Infancy and Childhood,* by Dr. WILFRID SHELDON (J. and A. Churchill, 24s.). There are also certain additions, such as an account of the tuberculin patch test, and it is a tribute to the author's wisdom that he has seen fit to revise his section on infant feeding in accordance with advances in his practice—a welcome finding when so often a "system" of feeding once adopted remains the same for the lifetime of the physician! There are several new illustrations, and a useful appendix containing lists of proprietary vitamin preparations. This popular book should continue to sell widely among students and practitioners.

The first volume of the tenth edition of Cunningham's *Manual of Practical Anatomy,* revised by Prof. J. C. BRASH and Dr. E. B. JAMIESON, has been published by the Oxford University Press at the price of 15s. We welcome the continuance of this popular student's textbook on the traditional academic lines of its predecessors. Besides some additions and amendments to the text, several new radiographs and line drawings, and a coloured figure of the axillary and sterno-clavicular regions, have been included. This book has now served its purpose as a guide to dissectors for over fifty years. Long may it carry on this most important function!

In *The Conquest of Bacteria: from 606 to 693* F. SHERWOOD TAYLOR has chosen a subject of more limited interest than those of his *Science Front, 1939,* which we reviewed recently. As an exposition of chemotherapy in terms intelligible to the layman it has the same merits of lucidity, scientific accuracy, and freedom from overstatement. The scope and effects of sulphonamide treatment are described in some detail, and the only serious criticism which can be made—itself a matter of opinion rather than of fact—is that the advantages of sulphapyridine over sulphanilamide for some purposes are perhaps less certain than is here implied. The new book is published at 6s. by Secker and Warburg.

Preparations and Appliances

IMPROVED WALKING CALLIPER

Mr. G. H. STEELE, F.R.C.S. (Guildford) writes:

Two difficulties met with in connexion with walking callipers are to make ischial weight-bearing comfortable and to decide whether the calliper is taking the whole weight of the patient. As regards the first, the standard alternatives of a ring and a bucket are equally hard, and the latter does not really take much weight off the ischium. Being struck by the comfort of a car seat consisting of an inflated rubber tyre, I decided to incorporate such a device in the ring of a calliper, as shown in the diagram (Fig. 1). A section of cycle tyre extends along

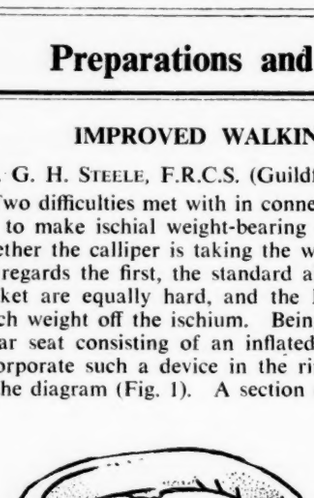

FIG. 1

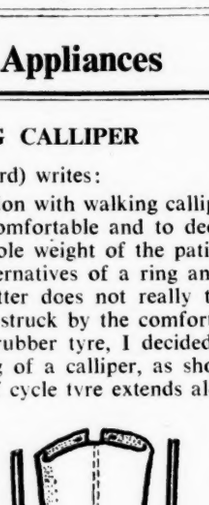

FIG. 2

the inner and posterior parts of the ring and can be inflated to any desired pressure.

As regards the second, a hand slipped between the tuberosity and the ring merely tells if most of the weight is being taken by the calliper. With a shoe the finger can be slipped under the heel, but with a boot, which is more comfortable, there is no way of doing this except to cut a hole in the back of the heel. This has been done and the hole covered by a press-button flap (Fig. 2).

The improved calliper has been made for me by Messrs. Sillis, Strudwick and Co., 131, Albert Street, N.W.1.

PROTECTION OF THE EARS

Since the outbreak of war a number of devices for protecting the ear against noise and blast have been put on the market. The cheapest remedy is plugs of clean cotton-wool previously impregnated with vaseline. They can be carried in a small tin case in the pocket or handbag.

Ear-pax Ear Plugs provide a convenient cotton-wool plug for the ears and a rubber mouth cushion to clench between the teeth, as advised by the Ministry of Home Security. The cotton-wool would give an even better protection to the ears if impregnated with vaseline. The price is 6d. the set.

Sound Deadener (A. and H., price 1s. the pair) is a malleable plug of fibrous clay designed to exclude noise and protect the ear drums. It has, however, the disadvantage that in a susceptible person prolonged and frequent use might set up an external otitis.

Aurax Ear Protectors should offer good protection against blast, but would not appear to be so efficient against noise. There is a risk that with prolonged use, as, for example, during sleep, they might set up an eczema of the external auditory meatus. They have the advantage of being portable and handy. Price, 1s. the pair.

A MATERNITY HOSPITAL AT THE HOME FRONT

BY

MARGARET BASDEN, F.R.C.S., F.R.C.O.G.

Now that London air raids are becoming more frequent perhaps a short account of the wartime methods employed at the Mothers' Hospital, Clapton—a maternity hospital of one hundred beds in a thickly populated district of East London—may be of some interest.

This hospital, in a pre-war survey of hospitals by the Ministry of Health, was at first considered too vulnerable to be used in time of war owing to its being built in a series of one-story bungalows, except for the isolation and administrative blocks. Eventually, however, consent was obtained to continue using it provided an air-raid shelter capable of accommodating all the patients and staff was built in the grounds. This was done, and the shelter was equipped with running water, electric lighting and heating, facilities for preparing babies' feeds, tea for patients, etc. It was connected with the colonnade, along which the blocks are built, by white asphalt paths which show up fairly well at night. It was not ready for use until the end of October. For the first three months of the war, until the E.M.S. abandoned maternity hospitals, the hospital came under this scheme, and a member of the consultant staff (the writer) was allocated to reside there with the three resident medical officers, the other obstetric surgeons being appointed to full-time work in the E.M.S. elsewhere.

An attempt to reduce the number of patients until the shelter was ready proved only partially successful owing to the return of many expectant mothers from reception areas and the closing of certain other maternity hospitals; also because it seemed desirable to begin admitting a few gynaecological cases (which has been continued) owing to the pressure on beds elsewhere.

It was felt that the patients would feel happier and less nervous if they were not completely bedridden but knew they could get up and be independent in case of emergency, and we therefore decided from the beginning to allow them to get out of bed for a few minutes the day the baby was born and thereafter to do a little more each day. Abdominal operation cases, including Caesarean section, were allowed up on the fifth day, and I have no doubt this played an important part in creating the carefree and happy atmosphere which prevailed. The other results of the treatment were very interesting. There was less morbidity, better involution, and considerably less venous thrombosis (though the latter was probably partly accounted for by the increased use of elastoplast strapping both in the wards and in the ante-natal department). The patients seemed far better and stronger on their discharge—an important consideration in these times of stress—and the ward sisters, who always tend to be conservative in their outlook, were enthusiastic about the good results. When, therefore, the shelter was completed we had no hesitation in arranging to allow most of the patients to walk to it in case of a raid, when the baby was a day or two old. Any patient unfit to walk was notified as a potential chair or stretcher case, and every night a list was prepared giving the number of such cases in each block. A typical total for the whole hospital would be three stretcher and eight chair cases. Stretcher cases were nursed with a canvas stretcher under the bottom sheet, and one could tell at a glance on entering a ward the number of such cases by counting the stretcher poles. Each patient had her gas-mask, coat, shoes, and a spare blanket always at hand, and her baby beside her, to ensure the minimum delay in leaving the ward. Practice warnings were occasionally given, and it took about seven minutes to get everyone into the shelter. When, after three months, the other members of the consulting staff (now only on part-time service with the E.M.S.) were able to return, it was agreed that the methods already in practice should be continued except for individual variations in the time the abdominal cases were kept in bed.

With the increased frequency and severity of the raids we have had to vary our routine still further so far as the nights are concerned, and now all patients, except those whose delivery is anticipated within two hours, are taken each night to the shelter, if possible before the sirens sound the night alarm. As many as there is room for, including all the most recently confined, lie side by side on mattresses, while the others unfortunately have to sit up, supported with pillows, their babies on a shelf above their heads. Labour cases are dealt with, whether by night or day, in a reinforced labour ward in one of the blocks, and so far no ill effects have followed the wheeling of patients between it and the shelter during raids. Emergency equipment for confinements is available in the shelter, but has not so far been used.

The problem of shelter accommodation during long night raids is a serious one, and is receiving urgent consideration, for, in addition to the patients, sleeping accommodation has to be arranged for the staff. These, too, lie on mattresses on the ground, but much more closely packed than would be safe for the patients, and head to foot. It is, however, surprising how much better one can sleep in such conditions than might have been imagined before the war. It is natural that patients and staff alike should now be feeling the strain, but we have had very few complaints. The patients say how safe they feel, and many would like to be admitted before labour starts. The only complaint I have had to deal with came from a husband whose wife was in the hospital when there were anything up to seven raids in a day. He resented her being allowed to do so much for herself, but, despite his criticisms, she was discharged quite well on the ninth day, and her baby, which weighed over 8½ lb. at birth and was entirely breast-fed, had regained its birth weight by that time.

By the desire of the board of management I have continued to sleep at the hospital, and can thus say from personal experience how smoothly the scheme works, how well the patients stand it, and how striking has been the absence of any confusion or panic. Speed has proved an important factor, for more than once the first warning has been the dropping of bombs. One has then wondered what might have happened had the majority of the patients been dependent on being wheeled on chairs or stretchers, and also where these could have been placed in the already overcrowded shelter.

We have not forgotten that the early adoption of the erect position is said to increase the tendency to prolapse (though in our cases it is too soon to express an opinion), or that neurasthenia may follow too short a rest in bed after operation or confinement; but these risks we have felt justified in taking to avoid more serious ones.

The annual report of the Scottish Mental Hospitals Pathological Scheme, which is operated from Edinburgh Royal Infirmary, describes a large amount of useful work, notwithstanding the inevitable disturbances made by the war in the facilities for research. The continued investigation into the obscure polio-encephalitis first described by Wernicke is mentioned; it is believed that this may turn out to be of first practical importance to mental hospitals. The chief work of the year has been the study of the cerebral vessels and circulation from their histological and experimental aspects. The vascular pattern of cerebral tumours has also been studied. Under the auspices of the scheme material from 215 cases, including 195 brains, principally from the Royal Edinburgh Mental Hospital and Murray Royal, Perth, has been examined histologically. A course of lectures and demonstrations in neuropathology was arranged and two laboratory meetings for staffs of the contributing hospitals were held during the year. Dr. William Blackwood has succeeded Dr. A. C. P. Campbell as pathologist to the scheme.

BRITISH MEDICAL JOURNAL

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THE JOURNAL'S CENTENARY

This week there occurs a centenary which in happier times would have been celebrated by the publication of a large special number of the *British Medical Journal*. The British Medical Association, as most readers know, was founded on July 19, 1832, by Sir Charles Hastings of Worcester as the Provincial Medical and Surgical Association. From 1833 to 1853 it published annually a volume of *Transactions*. But about the middle of that period a step of far greater consequence was taken by the founding of a new weekly periodical, the *Provincial Medical and Surgical Journal*, of which the first number appeared on October 3, 1840. The title of that paper—our direct ancestor—was changed in January, 1853, to the *Association Medical Journal*; then, four years later, on January 3, 1857, the organ of the renamed British Medical Association took the title *British Medical Journal*. There had grown up a feeling among the members that the Association ought to widen its scope and that it should be made to combine in name, as it had already begun to do in fact, medical men practising in all parts of the British Isles. Naturally the *Journal* followed suit.

The first number of the publication which completes its hundredth year this week appeared under the joint editorship of Drs. Hennis Green of London and R. J. N. Streeton of Worcester. They did not announce it in so many words as the official organ of the Provincial Medical Association, but the intimate connexion between Association and journal was obvious from the first. The early numbers were printed in Bread Street Hill, in the City of London, and published in Paternoster Row. The standard size was sixteen octavo pages, 10½″ by 7½″, printed in double columns. At the end of March, 1844, the title-page of Volume 8 bore the following information: "Edited for the Provincial Medical and Surgical Association by Robert J. N. Streeton, Secretary of the Association." With that announcement the *Journal* passed explicitly under the control of the Officers and Council of the Association. It was a highly respectable periodical, well supplied on the scientific side with clinical records and papers on the practice of medicine and surgery. Its leading articles were composed in a tone that matched the high aims of the fathers of the Association. Medical Reform was in the air; Thomas Wakley, the medical reformer, still plied his combative pen in the *Lancet*; and early Bills paving the way for the Medical Act of 1858, which set up the General Medical Council, received much notice in the pages of the two weekly journals and in local meetings of the Association. The domestic history of the *British Medical Journal* as far as 1932 was outlined by E. Muirhead Little in the commemorative volume published by the British Medical Association at the time of its centenary. In that book are appreciations of two outstanding men, Ernest Hart and Sir Dawson Williams, who each for thirty years held the post of Editor, and between them, with able help from C. Louis Taylor, established the position of the paper. Up to the time of his retirement at the beginning of 1928 Dawson Williams "lived for the *B.M.J.*," and it is hoped that the imprint of his character and ideals may still be discerned in its pages. The *Journal* from its earliest number combined the function of a magazine of the science and art of medicine with that of a medico-political organ, and as the years went on it became largely responsible for building up the Association by the interest it aroused in professional affairs of every kind and in matters affecting the public health. As the journal of an organization which became co-terminous with the British Empire it has formed a vital link between scattered members, who now number 40,000—the largest total ever reached.

The circumstances of October, 1940, forbid any attempt at a broad survey of professional and scientific progress as portrayed by one weekly medical newspaper during the past hundred years. This is not the time for a leisurely backward look at the march of medicine through its most momentous epoch—an epoch which began with the introduction of anaesthesia in the 'forties and the rise of bacteriology, which included the revolutions brought about by Lister and Florence Nightingale, and which closes in a period of great advance in chemotherapy, in radiology, in endocrinology, in psychological medicine, and in the recognition and treatment of deficiency diseases. But we are fortunate to be able to print a retrospective article from the pen of our senior contributor, the revered surgeon and historian whose initials "D'A. P." have been familiar to generations of readers. We also have the privilege of publishing birthday greetings from the Minister of Health, the President of the Royal Society, and a number of leaders of the medical profession, and messages of congratulation from brother editors.

To-day the *British Medical Journal*, with a circulation of 43,000 but dwindled in size under wartime restrictions, is endeavouring to continue the service it has given to the profession for a hundred years in bad times and in good. Once again there is a shortage of paper and staff, and a censorship of the Press; medical practice and medical education are dislocated; military medicine and surgery occupy the foreground of many readers' minds. The years 1914–18 left their mark on the profession and on the medical press, but the full force of Governmental control took long to develop. The beginning of the second year of this war finds Britain an embattled country subject to perpetual air raids and alarms and threatened with invasion, and the treatment of civilian war casualties is a matter of daily concern of doctors throughout the land. These grim facts, like the effects of wholesale evacuation and the enforcement of a rigorous black-out, have been mirrored in our pages week by week. The future is obscure; but British hearts are stout. Medical men and women will do their duty whatever befalls, and the *Journal* looks forward to carrying on its work for them, for medicine, and for the public.

CHANGE OF THOUGHT IN MEDICINE 1840-1940

Never has a century seen so many changes in medical thought as that now under review; the interval between Linacre the authoritarian and Sydenham the clinician was nearly half as long again. In 1840 it would have been noted by the observant that the few preceding years had witnessed a significant change by the introduction of the study of physical signs, thanks to the reviews of Auenbrugger's method of percussion and Laennec's discovery of auscultation. The physician's prejudice, originally inspired by the mediaeval universities, against physical examination of his patient had at length to give way in face of the enthusiasm of those who had returned from Paris fresh from the study of these new methods. The authority of such leaders of the profession as Sir Thomas Watson and Sir Henry Halford, who sneered at these innovations, could do no more than delay an inevitable change of thought. Careful correlation between symptoms and physical signs became the order of the day, and the chief weakness of this phase was the failure to recognize the underlying importance of the condition of the cardiac muscle because of the interest excited by cardiac murmurs. Morbid anatomy had already come into its own with Bichat, but assumed new importance now that physical signs could predict its findings with increasing accuracy. Then Virchow's doctrine of cellular pathology added to the interest of morbid anatomy, albeit his undue emphasis on the initial localization of the disease process limited progress in some directions. For several decades medicine remained founded on morbid anatomy, together with clinical descriptions which for accuracy and artistry have never been surpassed and which to-day we do not even attempt to rival. While this harmonizing of physical signs with post-mortem findings formed the solid basis on which all subsequent progress had to rest, it had one serious drawback. The concentration on end results led to a nihilistic attitude towards therapeutics. What drug could be expected to correct such serious organic lesions? it was asked, forgetful of the earlier stages. Bleedings, severe purgations, and other drastic measures had passed out of fashion, and there seemed little to replace them.

The deplorable condition of sanitation disclosed by Edwin Chadwick naturally strengthened the belief in telluric influences and miasmas, until the introduction of Pasteur's germ theory, when the lingering belief in spontaneous generation slowly died. And so the rise of bacteriology marks the next phase of thought and one which carried its own limitations with it, for the seed was intensively studied without due reference to the soil. This destroyed to a large extent the belief in diatheses, which truth to tell rested on a vague and unscientific basis until revived in recent years in a more precise form by the study of allergy and of the inborn errors of metabolism. In the retrospect we can see now that the nineties of last century were indeed epoch-making. The chemical resources of the body were for the first time realized in the beginnings of endocrinology, and in the processes of immunization, whether passive by antitoxins or active by vaccines. Thus a more lively faith in therapeutics was reborn, since it was seen that the body prepared for its own purposes chemical substances, infinitesimal in quantity but highly potent in their effect. One outcome of this belief in the latent resources of the body was the open-air treatment of tuberculosis, originally advocated and practised by Bodington as long ago as 1840, but then generally rejected. Still more important was the introduction of clinical pathology and the discovery of *x* rays. The static attitude of normal and morbid anatomy became a dynamic one when necropsy was reinforced by biopsy and organs could be visualized at work; the laboratory moved closer to the bedside. "Action at a distance" by focal sepsis became recognized.

The significance of these changes which ushered in the new century was clearly grasped by Sir James Goodhart when he discoursed on the passing of morbid anatomy, and humorously referred to the appearance of a new hybrid—the biochemist. For physiological chemistry had given birth to a very vital daughter: no longer was it adequate to analyse secretions and excretions; the emphasis was thrown back on to changes in the blood stream, and the biochemist began to grapple with the difficult problems of the changes within the cell itself. The discovery of the importance of accessory food factors, as Hopkins first called them, but which we now know as vitamins, led to the recognition of deficiency diseases and provided a new basis for dietetics. With all these rapid changes it is not surprising that a somewhat less critical attitude began to prevail towards anything new; and airy hypotheses, such as those concerning uric acid and intestinal stasis, for example, acquired a short-lived popularity. Then came the last war, and with it the recognition of the great importance of the psychoneuroses, a subject which the orthodox had hitherto looked at askance. The close alliance between physical signs and morbid anatomy had led to a sharp distinction being drawn between organic and functional disorders. Now at last it was realized that stress had been laid too much on the disease and not enough on the individual, and that disordered function could lead to disorder of structure. This became more comprehensible when it was found that every nervous impulse led to the liberation of a chemical substance which directly activated the appropriate tissue, and the pituitary was seen to be the transformer of emotional effects into chemical reactions. Consequently the distinction between disorders of the mind and of the body became less rigid, and the last few years have seen a vigorous application of active therapeutic agents in mental disease. Thus a conception is beginning to emerge of the psychosomatic unity of the individual.

COMPOUND FRACTURES

Statistics are peculiarly unreliable in estimating the value of the treatment of compound fractures, but the variations in the death rate which appear in a recent American symposium[1 2 3 4 5] require some explanation. Dr. Winnett Orr[2] lost seven patients in his series of 658 cases and Dr. W. O'Neill Sherman[3] two in 11,127. These figures compare with Dr. Trueta's six deaths in 1,073 cases in Barcelona, but Dr. J. T. Reynolds and his colleagues[4] lost thirty-one out of 131 patients and Dr. O. J. Hermann[5] twenty-three out of 398. A probable cause of this big

[1] *Arch. Surg.*, Chicago, 1940, **40**, 821.
[2] Ibid., 825.
[3] Ibid., 838.
[4] Ibid., 844.
[5] Ibid., 853.

discrepancy lies in the fact that Reynolds and Hermann include all the patients suffering from multiple injury and profound shock who died within minutes or hours of reaching their hospitals, and, though it may be argued that the efficiency of a city's ambulance service increases the mortality rate of its casualty hospitals, this fact illustrates that the first enemy of the fracture surgeon to-day is shock rather than sepsis. Yet the treatment of shock must not be allowed to delay or shorten the essential surgical débridement of these wounds. Dr. Darrach[1] urges treatment of shock in the operating theatre before and during the operation. In the Boston City Hospital the patient is admitted into a "shock room" and placed in a "shock bed," where electric blankets are applied and intravenous infusion, etc., are immediately instituted. These observations strengthen the belief that "anti-shock teams," working efficiently and rapidly, will be essential if the mortality rate from compound fractures resulting from mass air raids is to be lower than the 40% of pre-Listerian days. While all five writers agree that débridement must be prompt and thorough, it is not yet sufficiently stressed that an hour or more may be the shortest time in which this operation can be properly performed. Cursory excision of skin with primary suture over heavily contaminated fascial planes, however clean these may look, is a serious offence. These papers give little new evidence on the more debatable points in the treatment of compound fractures. No mention is made of the problems of transport. The prophylaxis of sepsis with sulphanilamide in the wound receives no attention, and the only antiseptics mentioned are ether, iodine, alcohol, and hypochlorite. Browning's work on the flavines certainly should not be disregarded in the surgery of these injuries. Other controversial points are dealt with in a purely individualistic manner. No one will be surprised that Dr. Winnett Orr[2] does not advocate primary suture of the excised wounds, but his deliberate reduction of the fracture before débridement makes as little appeal as Dr. Sherman's routine employment of the Carrel-Dakin irrigation.[3] These methods and internal fixation in recent compound fractures, which Darrach, Sherman, and Hermann are willing to employ, must not be recommended to the many surgeons of varying experience who may have to treat the injuries of war. In any case, highly specialized methods can only give good results in highly specialized hands. In this country at this time we should concentrate on first principles, which, with improved anti-shock treatment and a more radical attitude towards débridement, will enable us to face compound fractures with confidence.

VITAMIN CONTENT OF FOOD

We have recently[6] called attention to the tables of food composition published by the Medical Research Council, from which the work of McCance and Widdowson has made it possible to calculate—at any rate to a first approximation—the value of any given diet as a source of protein, fat, carbohydrate, and most of the essential minerals. For a complete picture of the diet, however, a knowledge of its vitamin contents is clearly also essential. To this knowledge there are almost daily additions, and it is, therefore, highly gratifying that the indispensable *Tables of the Vitamin Content of Human and Animal Foods*, published by Fixsen and Roscoe some three years ago,[7] should have been recently supplemented by the same authors.[8] The first survey occupied forty-four pages, of which four were introductory, thirty-five tabular, and five bibliographical; the corresponding figures for the supplement are one, sixty-one, and four—a total of sixty-six. There is thus a disproportionate increase in tabular matter, but the authors have been at pains to exercise the same critical discrimination as on the previous occasion, thereby enhancing the value of the information collected and distinguishing their compilations from the earlier much longer tables of Munsell and Smith. The reason for the increase is to be found mainly in the new array of figures for the vitamin C contents of vegetable products—twenty-three pages compared with fourteen of the first tables. The comparative rarity of scurvy and even of subscorbutic conditions, and the relative simplicity of the chemical test for ascorbic acid with dichlorophenolindophenol, suggest that postgraduate research into vitamin contents may be influenced as much by the desire to present results in impressively long columns of figures as by more purely humanitarian considerations. The compilers of these two sets of tables have done something more than summarize existing trustworthy knowledge in the most convenient form; they have inevitably called attention to the large, if slowly diminishing, gaps in our knowledge. They reveal, for example, that the claims of the herring and salmon to be rich sources of vitamin D are based on a by no means impressive array of data; that our knowledge of one of the most extensively used foods in the world—sweetened condensed milk—does not include any reliable information at all about its contents of vitamins A, D, B_1 (aneurin), riboflavin, and C (ascorbic acid); and that it is still not possible to tabulate trustworthy figures for the nicotinic acid and tocopherol (vitamin E) contents of even the staple foods of our people.

[6] *British Medical Journal*, 1940, **1**, 814.
[7] *Nutr. Abstr. Rev.*, 1937–8, **7**, 823.
[8] Ibid., 1939–40, **9**, 795.

RADIOTHERAPY OF CARCINOMA OF THE CERVIX

The third annual report[1] on the results of radiotherapy in cancer of the uterine cervix, issued by the League of Nations Health Organization, illustrates the increasing value to be obtained from a planned statistical inquiry, and shows the many pitfalls which must be avoided if the truth is to be extracted from the statistics. The report includes statements from seven more institutions than the previous year, but a further five statements had to be refused, largely on account of the high proportion of cured cases not microscopically verified. The main object of the committee presided over by Prof. Heyman was to promote uniformity in these statistics, so that the value of different methods of treatment may be later compared; but even on the simple basis adopted by the committee a perusal of the report shows how difficult it is to secure comparability between the material of different clinics. For example, about 30% of the patients seen at the Paris Radium Institute were not treated there, whereas at the Stockholm Radiumhemmet the figure is 5%, and at the Marie Curie Hospital only 2½%. Then the proportion of cases in the four clinical stages of the disease varies greatly in different clinics: nearly half the cases treated at the Paris Institute were in Stages I and II, 38% at Stockholm, 23% at the Marie Curie, and only one case out of 130 at Strasbourg. Furthermore, the statements from the sixteen centres vary widely in respect of the number of years to which they relate and of the number of patients treated each year. Whereas, therefore, the second object of the committee is still some way from realization, the combined figures give an accurate picture of the results of radiotherapy in the years before 1933. Of a total of over 9,000 patients 88% were treated radiologically, and 27.6% of these were alive without recurrence at the end of five years; 67.5% died of cancer; 1.6% were alive with recurrence; 1.3% were lost sight of; and 2.0% died of intercurrent disease. That the "cure" rate could

[1] Annual Report on the Results of Radiotherapy in Cancer of the Uterine Cervix. League of Nations Health Organization: 1939. III. Health.

be much higher if diagnosis were made earlier is shown by the following table:

	Number of Patients Treated	Percentage of Total	Relative Cure Rate per cent.
Stage I	871	10.9	57.2
„ II	2,305	29.0	37.6
„ III	3,420	43.0	22.0
„ IV	1,360	17.1	5.5
Totals	7,956	100.0	27.6

There was also published last year[2] a survey of the cases of uterine cancer seen at the Tübingen University Clinic in the years 1918–35. In this report Reichenmiller discusses a large number of factors—the geographical distribution, the fall in the number of cases of cancer during the inflation period of 1919–23, and the rise due to cancer propaganda since 1929; and the influence of pregnancy and of the age of onset of menstruation, and of a family history of cancer. The five-year cure rate in the 725 patients treated was 22.6%, but the author's attempt to compare the results of different methods of treatment is not convincing. The League of Nations report shows the reasons for this failure, and it is greatly to be hoped that more centres will accept their standards and contribute to the valuable work which they are doing.

HYGIENE OF THE AIR-RAID SHELTERS

Air-raid shelters were at first regarded with indifference, but as daylight raiding developed they became places of refuge for an hour. With the onset of all-night raiding, however, they have become dormitories, and the health problems they create have become urgent. For some time access to the tube railways, the most obvious deep shelters in London, was forbidden, but the bombed population took matters into their own hands, and now the nightly scenes on tube platforms and approaches, with their sprawling multitudes on every kind of rough upholstery, have to be seen to be believed. There is reason for supposing that the Anderson shelters in the gardens of small dwellings are not fully used. Even if they have been kept in a habitable condition during the year or more since they were put in, space is restricted, and the sense of immobilization and solitude must become almost unbearable with the passage of hours. The coming of cold weather also leads people to forsake domestic for communal shelters, where warmth and lighting are more likely to be available and social contacts can be made. In time of danger people desire to get together, and even safety, or at least a high degree of it, is secondary to company. Those who have carried out "mass observation" state that in representative sections of the London community one-third of the people were found sleeping inside their homes, one-third in domestic shelters, and the remainder in communal shelters, including the tubes. The result has been extreme overcrowding of the communal shelters. In some of them less than one foot of head room per person when lying down is available. In one vault in the East End intended as an emergency shelter for 5,000 people twice that number are said to take refuge every night, and this place, being no one's particular responsibility, is left without cleansing and disinfection. The night population at each tube station is up to "capacity," many even lying uncomfortably on the stopped escalators. At one station alone we counted the next morning twelve dustbins of refuse, the result of one night's occupancy. Until the rush hour is over and the staff are free to clean up, the stench of the platforms and passages at some stations is overpowering. "Tube (or shelter) sore throat" is said to be already a common complaint, and what more serious epidemics threaten as the winter advances can be imagined.

Lord Horder, as chairman of a committee of inquiry whose report is already in the hands of the Ministries of Health and Home Security, has stated that the crux of the problem is overcrowding. It is the fact of overcrowding which governs most of the recommendations made by the committee. The problem will be eased somewhat by the fresh evacuation of mothers with children and of the infirm which the Minister of Health has already taken steps to bring about; also perhaps by the rather dubious poster designed to shame able-bodied men from using the tubes. But still the need is for more shelters, properly scheduled, regularly inspected, adequately ventilated, and cleansed daily. The shelters, as was only to be expected from their hasty selection and adaptation, differ widely in lighting, ventilation, and provision for seating. Lavatory arrangements have been improvised, but these, on the tubes especially, are necessarily primitive, for the ordinary sanitary constructions had not been brought down to these deep levels. Any small group of shelters even in the same borough reveal great differences. In one shelter the people are packed together in narrow trenches, seated opposite to one another with their knees almost touching; in another they have abundant room to sit and move about. In some centres personal enterprise has provided various amenities—a public shelter in Bond Street actually had a carpet and pictures, and in another in Lincoln's Inn tables are provided on which to continue one's work—while others are bare of everything except standing-room amid supports and struts. Lord Horder in a letter to the *Times* declares that the appointment of shelter marshals as whole-time paid officers with a recognized status is essential to the proper use and maintenance of all public shelters. These people, both men and women, should be regarded not merely as disciplinarians but as friends and leaders whose simple instructions and exhortations on matters of behaviour and cleanliness may do much to evoke a sense of personal and corporate responsibility.

The minimum requirements for public shelters are sitting or sleeping accommodation, or both, lighting and warmth, sanitary conveniences and ventilation, and some first-aid equipment. Medical supervision seems most desirable if widespread illness and epidemics are to be prevented. It should not be beyond practical possibility for the local health organizations to form a roster from which medical men and women would be detailed to visit shelters in their neighbourhood at the beginning of night raids and at other times in order to ensure that some hygienic standard was maintained, to keep an eye on the assemblage of shelter-users and weed out any who showed obvious signs of infectious illness, and perhaps to "get across" some ideas of simple personal hygiene, encouraging the people, for example, to wash themselves thoroughly before and after using the shelters. It would be a most desirable piece of preventive medicine as well as a public service of high importance. The shelter problem, largely epidemiological, is a major one with urgent claims to attention, and the Interdepartmental Committee which has been formed to put into effect the recommendations of the committee of inquiry as well as to deal with the general aspects of the situation may be trusted to keep in mind the fact that, as Lord Horder says, time is of the essence of the contract. This committee is now busily at work. Its chairman is Mr. Mabane, Parliamentary Secretary of the Ministry of Home Security, and the medical member is Dr. MacKenzie, who is also a member of the Horder Committee, which is continuing its inquiries.

[2] *Strahlentherapie*, 1939, **23**.

THE ANATOMY OF SENSATION

It is well known that a number of different types of sensory nerve-ending can be recognized histologically in the skin. Some are so extremely fine that they require a high-power objective for their study; others—for example, Pacinian corpuscles—are large enough to be detected with the naked eye. This morphological diversity suggests a functional specificity—that is, that each type of nerve-ending responds to a specific type of stimulus and that its corresponding nerve fibre conducts an impulse related to one sensory modality only. Researches carried out to test this suggestion have in the past led to negative or contradictory results, but this has seemed to some anatomists to be due mainly to the technical difficulty of studying histologically the sensory spots which give rise to different types of sensation when stimulated. Methods of silver impregnation, for example, have been commonly employed, and these are notoriously capricious in their results. During the past few years the study of this problem has been developed in the Anatomical Department of University College, London, under the direction of the late Prof. Woollard, with the use of *intra vitam* methylene blue for staining nerve-endings. The advantage of this method is that it is relatively consistent in its results and that it allows comparatively large areas of skin to be studied in a single thick preparation, so that nerve fibres can be followed to their endings over a considerable distance. More important still, it is a method which can be applied to living tissues in the intact animal. In a recent paper by Woollard, Weddell, and Harpman[1] the advantages of the methylene-blue technique are well illustrated. By the correlation of sensory tests on human skin with subsequent histological analysis the authors have been able to show that the sensation of cutaneous pain is subserved by a fine plexus of beaded nerve fibres which ramify in the superficial layers of the dermis and also in the deepest layers of the epidermis, terminating in free unencapsulated endings. Similar nerve fibres have been found providing an accessory innervation to encapsulated touch and pressure receptors, and represent the anatomical basis for the painful sensations which result from excessive stimulation of these receptors. Moreover, these beaded nerve fibres can be demonstrated in the ear of a living rabbit, and if one fibre is touched the animal shows a reaction characteristic of a painful stimulus. On the other hand, if the nerve fibres of a different type which ramify about a hair follicle are similarly touched the animal shows no such response. It is also believed that the anatomical features of the "pain plexus" are adequate to explain all those cutaneous phenomena which have been attributed to a special system of "nocifensor" nerves. The authors refer to other studies which lead them to assign specific morphological types of nerve-ending to the sensations of touch, heat, and cold, and they find strong evidence for the conception of a punctate sensibility in the skin. They point out, however, that this theory must be interpreted on a three-dimensional basis, for different types of ending may lie beneath the same cutaneous spot, but at different levels of depth. Failure to realize this possibility has been an obvious source of confusion in past investigations on cutaneous sensibility. The late Prof. Woollard's collaborators are carrying on this valuable work, and there is good reason to believe that their investigations will continue to advance still further our knowledge of the anatomy of sensation.

[1] *J. Anat.*, 1940, **74**, 413.

"BULLETIN OF WAR MEDICINE"

The Medical Research Council has once more put the profession in its debt by issuing a survey of literature bearing upon the medical and surgical problems of war. As the Medical Research Committee it issued in 1918 a monthly "Medical Supplement" to the War Office "Daily Review of the Foreign Press," in which abstracts and summaries of foreign medical work were published. The *Bulletin of War Medicine*, the first issue of which is dated September, 1940, is arranged in sections under such headings as Wounds and Injuries, Anaesthesia, Blood Transfusion, Naval Medicine, Industrial Hygiene, to select a few. It differs from its forerunner in that it abstracts papers from British sources as well as from the foreign medical press, and the editorial work has been undertaken by the staff of the Bureau of Hygiene and Tropical Diseases—a sure guarantee of care, thoroughness, and accuracy. Arrangements have been made for distributing copies to medical officers of the Forces and to the civilian Emergency Medical Services. It is on sale (price 2s. 6d. net) for the profession generally. The abstracts are full and give details of the dose of drugs and other items of treatment. Each abstract provides, in this order, the name of the author, the title of the article, the abbreviated title of the journal in which the article appeared, with date, volume number, first and last page numbers, and number of figures and charts. It is proposed to publish the *Bulletin* every two months, and it should prove of the highest practical value to the many medical men who now have to meet the medical and surgical exigencies of war in the towns of Great Britain, on the seas, and on whatever battlefield our Forces may find themselves engaged with the enemy.

PROVISION OF MEALS AND MILK FOR SCHOOL CHILDREN

The Board of Education has reaffirmed the great importance it attaches to the development of the provision of meals and milk for school children, whether free or on payment of the cost of the food. To assist local education authorities in planning such development the Board has invited Mr. C. W. Maudslay, C.B., who retired on September 26 from the post of Principal Assistant Secretary in charge of its Medical Branch, and who has been closely concerned with this question for the last ten years, to continue in part-time employment for the purpose of visiting areas where the proposals made by the local authority under Circular 1520 do not appear to meet fully the needs of the area, and of discussing the matter with representatives of the authority. Mr. Maudslay will be concerned for the most part with administrative questions. The provision of meals and milk will continue to be investigated by the Board's medical officers in the course of their inspections of the School Health Services, but these inspections cover a much wider field and are necessarily held at long intervals in view of the limited number of medical officers on the Board's staff. Miss E. M. Langley, the Board's inspector of provision of meals arrangements, will continue to advise authorities in regard to the actual feeding plans, including questions of dietary, premises, and equipment.

We announce with great regret the death of Dr. Frederick George Thomson, F.R.C.P., consulting physician to the Royal United Hospital, Bath, and to the Royal National Hospital for Rheumatic Diseases, who was President of the British Medical Association in 1925–6. We hope to publish a memoir with portrait next week.

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INTRODUCTORY ADDRESS.

In the commencement of an undertaking like the present, it is customary to make some prefatory statement, by which those who give it their support may be put in possession of the views and prospects under which it comes before them. The custom is in itself a harmless one, and as some advantages attend a formal introduction and commendation of a work to the regards of the reader, we shall follow in the beaten course, and shall endeavour, on the present occasion, to set forth the main objects for the promotion of which the Provincial Medical and Surgical Journal is established.

The most important of these are—1st, to use the words of the Address of the Provincial Medical Association, issued at the institution of that body,—The maintenance of the honour and respectability of the medical profession; 2nd, The affording a special means of communication for the several medical and branch associations which have been formed in various parts of the kingdom; 3rd, The promotion, as far as possible, of the interests of these admirable institutions, and more especially of those of the Provincial Association; 4th, The collecting and recording of the numerous facts observed in every part of the provinces, many of which are now diffused through various channels of information, and too often overlooked from the very causes which should render them of the greatest utility; and 5th, The working out of those rich mines of information and medical instruction—the County Hospitals, Infirmaries, and Dispensaries.

The maintenance of the respectability of the profession, as it will readily be perceived, necessarily involves the contemplation of those great questions of medical reform which are now engaging the attention of medical practitioners. In the consideration of these we shall at once take the highest ground,—that of public utility. The establishment of a system of competent medical education; the securing to the profession a wholesome form of government; the suppression of empiricism; the providing of proper medical attendance for those who are unable to procure it for themselves; and the placing of these and other portions of medical police under the superintendence of those who are the best acquainted with the subject,—are all and each of them but so many modes of advancing the welfare and guarding the interests of the community in general. At the same time, these measures have a direct tendency to maintain medical practitioners, as a class, in that rank of society which, by their intellectual acquirements, by their general moral character, and by the importance of the duties entrusted to them, they are justly entitled to hold.

Of the utility of associated interests, both in giving unity to the efforts of the scattered members of the profession for the attainment of the preceding objects, and in encouraging and promoting scientific and practical inquiries, the proceedings of the Provincial Association, and of the several societies which have been formed since the foundation of that body, afford ample proof. The public mind is becoming better informed upon many of these great questions, and more alive to their intrinsic importance. They are beginning to be considered, not merely in the light of a personal struggle, on the part of the medical man, for his own individual rights and privileges, but also as a part of the system of a wise and effective form of government, in which the health and lives of the people become equally objects of attention with the regulation and preservation of the rights of property. The direct bearing of the exertions of these institutions in effecting measures of practical improvement, is evinced by the enactment of the Small-Pox Prevention Act, and the exclusive confiding of the practice of vaccination to the hands of those who are, by education and practice, alone qualified for the task. We feel gratified in announcing that the effects of the Report on Vaccination are becoming more and more manifest. That Report, together with the petition founded upon it, directly led to the most beneficial legislative measure that our profession has ever obtained from Parliament.

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This is a reproduction by half-tone process of the first page of the first number of the "Journal." The text of the Introductory Address is continued overleaf but not in facsimile.

Continuation, from preceding page, of Introductory Address, October 3, 1840

We entertained considerable doubts about the propriety of throwing the working of the Vaccination Extension Bill into the hands of the Poor Law Commissioners. We are glad, however, to find that they are taking up the subject in earnest, and by the instructions which they are circulating and the measures they are enforcing, we confidently hope that the object of the Legislature will be fully accomplished. The Commissioners applied for permission to reprint the Report for circulation among their Unions. This permission was freely granted; and by this time, we believe, the reprint has been widely disseminated throughout the kingdom. Within these two days, likewise, we have received copies of a German translation of the Report. This important service was performed by the celebrated Gmelin, of Tubingen; and we cannot have a more gratifying proof of the value of this Report, than the anxiety evinced by so distinguished an individual to make it known among his brethren on the continent. At the same time, the subject of vaccination itself has received, through the encouragement given to one of its members, Mr. Ceely, in the prosecution and publication of his admirable experiments, an illustration, second only in importance to the original researches of its immortal discoverer.

The altered tone of the Poor Law Commissioners, in their communications with the members of the medical profession; the removing, or at least the professed intention of removing, some of the more objectionable methods of providing for medical attendance upon the sick poor; the disposition which there would seem to be of devising a better system of medical relief than that at first attempted to be forced upon the profession and the public,—a system at once unjust and degrading to the medical practitioner, and cruelly inefficient as regards the suffering poor,—are also unquestionably owing to the exertions made by the Provincial and other Associations, in placing those questions in their true bearings before the public. In this, we need scarcely remark, they have been materially aided by the personal exertions of Mr. Rumsey and other gentlemen, who, from their practical acquaintance with the wants of the sick poor, and the methods by which alone those wants can be efficiently administered to, are well qualified for the task which they have hitherto so ably performed.

Another highly important feature in the institutions whose prosperity we are desirous of promoting, is the facility afforded by them for collecting and recording statistical information. It is from well-arranged medico-statistical and topographical inquiries,—such as the Medical Topography of the Land's End, by Dr. Forbes, and other able essays of similar character in the volumes of the Provincial Transactions, by Drs. Carrick and Symonds, Mr. Watson, Mr. Addison, Dr. Black, Dr. Shapter, and others,—that we are ultimately to expect a vast increase to our knowledge of the remote causes of disease generally, and especially of the external circumstances which have a direct or indirect bearing in the production of endemic diseases, or in favouring the spread of epidemics. The value of these researches, when conducted on right principles, and brought to bear upon each other, can scarcely be estimated too highly. It is by the working out and comparison of facts thus collected in different localities, that we may hope, in time, to isolate and define the causes of morbid action, and consequently to be able, if not to eradicate or neutralize the ascertained noxious agent from an unhealthy spot, at least to keep in check the predisposition which may have been inherited or acquired by removing those who suffer from it to other and more favourably situated parts of the country. But at the same time that the pages of the Provincial Transactions afford evidence of the value of these more systematic and elaborate treatises, and are admirably calculated to preserve them, minor points of inquiry, and facts relating to them which are constantly presenting themselves to notice, are too often allowed to escape. For the registration of these facts, whether observed by members of the Provincial Association and other similar societies, or by others, and for the communication of knowledge of this description, the pages of this journal will be found well adapted.

In the illustration of scientific and practical subjects of inquiry, as well as in giving effect and unity to the expression to the sentiments of the various associations, and their branches, we hope to be the means of promoting that intercourse between localities remotely situated in point of distance, which is of so much importance, by withdrawing the isolated individual from the little world of self, in which his state of isolation has a necessary tendency to involve him, and placing him in contact with his fellow men.

—"Eloqui copiose, modo prudenter, melius est quam vel acutissime sine eloquentiâ cogitare;—

or, in other words, the prudent interchange of knowledge benefits society more than the workings of the deepest reasoning powers confined within the narrow circle of a man's own thoughts. We would, therefore, urge upon practitioners residing in retired country districts, many of whom are possessed of powers of observation and reflection not inferior to those of their more favourably situated brethren, to communicate the results of their observations on disease, as it occurs in the more simple and secluded habits of the countryman;—while to the hospital physician and surgeon, we look for the statistical reports of disease in the mass; for the general results of a combination of causes; for the effects upon life and health produced by the crowding together of large bodies of people in limits more or less circumscribed; for the influence exercised by the artificial state of existence induced by the excitement of social life; and for the operation of the various manufacturing processes in which large masses of the population of this country are constantly engaged. We trust that we do not ask too much from those who are ever on the alert to benefit suffering humanity, when we solicit from each the contribution of his mite, to increase the mass of general information, according to the measure of his ability, his opportunity, and his time; and we are assured, that we shall not ask in vain from an enlightened and intellectual profession, capable of estimating the advantages to be reaped from the combination of efforts towards one great end. That end is the general benefit of the community, as well in the advancement of our science, and the cultivation and improvement of our practical resources, as in the securing the efficient distribution of these improvements to every class of the population, by the due regulation of the polity of the profession in all its branches.

Such, then, are the objects we have in view,—and when we look at the circumstances under which we have commenced our undertaking, to the assurances of support which we have received, and to the high character and standing of those from whom such assurances have been given to us, we cannot but anticipate the best reward of our exertions, in the consciousness of being instrumental in promoting, alike, the welfare of the community and of our professional brethren. We cannot, for a moment, doubt, that those who are treading in the footsteps of Jenner, of Parry, of Armstrong, of Hey, of Park, Darwin, Currie, Johnstone, &c. &c., will be willing to devote a portion of their time to the extending over a wider sphere that knowledge, the fruits of which are so beneficially felt within the bounds of their own immediate vicinity; that they will be willing to interchange the results of their experience, in the observation and cure of disease, with those who, though far removed, perhaps, in situation, are yet influenced by the same ardent desire for the increase of knowledge and the alleviation of the amount of human suffering.

While we thus hope for, and are encouraged to expect, the assistance of the many gifted individuals to be found among our provincial brethren, in carrying on the work which we have undertaken, we shall be desirous to obtain from every source, whether in this or in other countries, that information which is of scientific importance, or of practical utility. It will be our endeavour to select from the valuable matter constantly emanating from the continental and American press, such facts and observations as may interest or instruct, and, above all, such as have a practical bearing, or are likely to throw light upon obscure points. The researches which are now in progress, on the elementary character of the tissues and of many morbid deposits; on the composition and elementary structure of the blood, lymph, pus, milk, urine, and other fluids; on the development of the ovum, and its germ, &c., aided and prosecuted as they are with the use of microscopes of improved construction, by practised

observers, will be found to present many points of the highest interest in themselves, and ultimately tend to exercise vast influence, in the elucidation of many difficulties which now obscure and deface both our theories and our practice. To these we shall occasionally direct the attention of our readers, selecting always such as are of immediate and permanent utility, in preference to those which may be of more remote benefit, or transient interest. Authentic reports of cases, and the investigation of the powers of remedies, are other points which we shall keep constantly in view. Well-selected examples of disease, carefully and judiciously detailed, possess a definite character and individuality, which the most elaborate and well-digested treatise often fails to attain to, and are, therefore, of incalculable importance to the inexperienced practitioner. For the same reason, clinical lectures are of the highest utility, as explaining the essential points of the cases which they are intended to illustrate, and directing attention to the indications of treatment and the effects of the remedies employed. Lectures, whether clinical or specially intended to teach the various branches of Medicine, allow of more familiar illustration than is consistent with the plan of a regular treatise, and possess the further advantage of regulating the supply of information, so that the mental digestion is not gorged with a too great quantity of intellectual food at once. It is of advantage, also, for the more experienced practitioner to be able to compare the results of his own observation and reflection with those of his brethren residing in different and remote parts of the country. For this reason, as well as with the view of promoting those valuable establishments, the Provincial Medical Schools, it is proposed to make arrangements whereby the lectures delivered by the many excellent teachers who devote a portion of their time to this object, may be occasionally made of more extended utility. But we have said enough to make the general plan of the Provincial Medical and Surgical Journal apparent. We trust that, in the carrying it into execution, assisted as we are by the encouragement and support of those who are, on all hands, deservedly looked up to, we shall be found the unwearied, though humble, instruments of conveying information of what is passing to a large portion of our professional brethren, and of enabling them to communicate the results of their observation and reflection upon every part of medical and surgical science. To the attainment of these objects, we shall be ever desirous of devoting our energies, at the same time that we shall use every endeavour to promote a satisfactory arrangement, upon a firm and lasting basis, of the many important questions affecting the constitution of the medical profession, and the welfare of its members.

OUR HUNDREDTH BIRTHDAY

MESSAGES OF CONGRATULATION

We have the honour to print below congratulatory messages and birthday greetings received during the past week or two from the Minister of Health and the President of the Royal Society, and from a number of distinguished medical men who hold or have held the highest positions in our profession. Their compliments and good wishes are deeply appreciated by the Editorial staff.

The Right Hon. Malcolm MacDonald, M.P., Minister of Health :

It gives me much pleasure to send my greetings and congratulations to the *British Medical Journal* on having successfully reached its hundredth birthday.

Though one must feel regret that such an important occasion should fall at a time when this country is fighting for its life, the fact remains that nothing can remove "the *B.M.J.*" from the influential position it has secured for itself in the realms of medical literature.

My predecessors at the Ministry of Health, like myself, have often received valued help from the *Journal* in our work for the nation's health, and I sincerely hope that its good work in all its spheres of usefulness may long continue to flourish.

Sir William Bragg, O.M., P.R.S. :

It is a great pleasure to me as President of the Royal Society to send warm greetings to the Editor of the *British Medical Journal* on its hundredth birthday. In the early days of the Royal Society its Fellows took a great interest in medicine, and the old publications of the Society record a large number of discussions and experiments. It was natural that this should be so since medicine is itself one of the oldest of the experimental sciences. Knowledge has grown so rapidly that the Society can no longer give the right attention to all the sciences, nor can its publications describe all the discoveries that are made in many fields. The Society is all the more ready therefore to admire the fine service which the *British Medical Journal* has rendered to medicine and to science in general for the past hundred years ; and to express its earnest wishes for a vigorous and useful future.

Sir Robert Hutchison, Bt., President of the Royal College of Physicians of London :

It gives me great pleasure to send to the *British Medical Journal* the most cordial congratulations on its centenary. Few medical journals have enjoyed so long a life, for many perish prematurely, but the *B.M.J.* has gone on from strength to strength and is now, in its hundredth year, more vital and active than at any time in its long history. Our profession, like others, owes much to its periodical literature as the medium for the diffusion of new knowledge, for the pooling of experience, and for the discussion of matters affecting our general interests as a body. In all these respects the *British Medical Journal* has served medicine well, for it has always upheld the highest standards both scientific and ethical, and in these hazardous times, when the future of our profession is so uncertain, we may look to it with confidence for wise guidance and fearless advocacy of our rights. Every doctor must wish for it, therefore, a long continuance of life and prosperity.

Mr. Hugh Lett, President of the Royal College of Surgeons of England :

The advance in medical knowledge during the last forty years has been accompanied by a formidable increase in the literature, and at the present time there are no less than some two thousand medical journals and periodicals. The great majority of them are devoted to special subjects, but there remain a few which are concerned with the whole of medicine in its widest sense, which publish articles on every subject, give brief extracts of important papers which have appeared in other English or foreign medical periodicals, review books, and open their columns to correspondence. Such journals are valuable to all members of the profession, but indispensable to the general practitioner who wishes to keep abreast of new methods of diagnosis and treatment. Among them the *British Medical Journal* holds a very high position. Under the able and well-balanced direction of the present Editor its reputation has been more than maintained, and as it reaches its hundredth anniversary its pages reflect a youthful vigour and mature wisdom which are a happy omen for its continued success.

Those who are concerned with this publication must be greatly disappointed that the War should have prevented

a more elaborate celebration of its centenary, but we hope that they may find some consolation in the cordial congratulations and expressions of good will which they will receive from so many quarters at home and abroad.

Prof. W. Fletcher Shaw, President of the Royal College of Obstetricians and Gynaecologists :

On behalf of obstetricians and gynaecologists of the whole British Empire I send a warm greeting to the *British Medical Journal* on the completion of its first centenary.

Secure of an ever-increasing circulation, the *B.M.J.* might have been content to be a mere society journal, but, under a succession of able and broad-minded editors, it has been much more than this. In articles written by masters of their subject it has brought the advances in all branches of medicine before the large body of the profession, while the publicity given to original work has encouraged research. Moreover, it has shown interest in and given publicity to movements outside its own Association, and for this, in the early days of struggle for recognition, our own College owes its grateful thanks.

May its second century witness the same steady expansion of its influence so that it will complete this, as it does its first, in the very front rank of medical journals.

Sir Farquhar Buzzard, Bt., Regius Professor of Medicine, University of Oxford :

In these days of death and destruction it is consoling to contemplate for a moment the survival of a journal which has now completed a century of regular publication. During that time the *B.M.J.* has recorded advances in the science and art of medicine unparalleled by those of any other era, and has taken a predominant part in raising the ethical standards and social position of the profession. You, Mr. Editor, may well be proud of your own share in these achievements and of being the recipient, on the *Journal's* hundredth birthday, of hearty congratulations on the past and fervent good wishes for the future from innumerable readers and contributors, among whom please include myself.

Prof. John A. Ryle, Regius Professor of Physic, University of Cambridge :

Congratulations and many happy returns of the day! The *B.M.J.* has become a centenarian in hard but stirring times. Its ripe age has in no wise hampered its energies or its style. Its best standards are maintained and will, we know, be maintained in war as they have always been in peace. I am tempted to ask the question that is customarily put to all who reach their hundredth year—"To what do you attribute your long life?" The answer might have reference to many excellencies of conduct in the affairs of the *Journal,* but you, Sir, with natural modesty, have preferred that comment and eulogy should come from without. Let us say simply and with a warmth of friendly feeling that the *B.M.J.* has firmly established itself, in these beleaguered but free islands and throughout the Empire, as the chief organ and mouthpiece of the profession which it has sought so steadfastly and wholeheartedly to serve, to inform, and to instruct. Its wider circulation knows no limits in the two hemispheres of the world, which, in the field of practical medicine, it has always helped to unite. As a senior should, it has set a high example to medical journalism everywhere. And may I also say, in wishing continued success through a second hundred years, how fortunate the *Journal* has always been in its editorial staff? To the present staff come the good wishes and congratulations of thousands of medical men and women, to whom they have provided room for clinical and scientific papers and the freedom of the correspondence columns that is an essential part of our broader liberties.

Prof. L. S. P. Davidson, Professor of Medicine in the University of Edinburgh :

The medical profession in all parts of the British Empire will wish to send greetings to the *British Medical Journal* on reaching its hundredth birthday. During this long period the *B.M.J.* has been the principal source of supply of medical news and the main pipe-line for the distribution of information on all matters of policy pertaining to the welfare of the profession. For 100 years a large proportion of the practising members have relied on the *Journal* for keeping them *au fait* with modern methods of diagnosis and treatment. It might be thought that in its ripe old age some signs of decreased vitality would become apparent. Far from this being the case, individuals like the writer, who are largely interested in the academic side of medicine and in clinical science, have been greatly impressed by the enlightened work of the present editorial staff, who have published in recent years a steady stream of papers of the highest scientific value, supplemented by numerous editorials which judiciously combine a review of recent research work with a critical analysis of its application to medical practice. It is with great pleasure, therefore, that I wish the *B.M.J.* many happy returns of the day, a sentiment which its large number of readers in Scotland will enthusiastically endorse.

Surgeon Rear-Admiral J. W. McNee, Regius Professor of Practice of Medicine, University of Glasgow :

On the hundredth anniversary of the birth of the *Journal* I send you and your staff greetings and congratulations from a Scottish university. This period represents a century of steady and faithful work on behalf of our profession, who owe so much to the *Journal* for keeping them in touch with all changes and advances in practical knowledge. The *Journal* begins its second century in difficult times, but full of vigour, and we all wish it a prosperous journey to its bicentenary.

Prof. T. G. Moorhead, Regius Professor of Physic, Trinity College, Dublin :

As a member of the British Medical Association now for nearly forty years, and as one who has been familiar since childhood with the weekly arrival of the *British Medical Journal,* it is with feelings of almost personal pride in the achievements of that *Journal,* and in the place that it holds among medical periodicals, that I offer to you as Editor my heartiest congratulations on the attainment of its hundredth birthday.

The British Medical Association was formed to promote the medical and allied sciences, and to maintain the honour and interests of the medical profession. Throughout the entire century of its existence the *Journal* has indeed fulfilled these purposes. A study of its pages will show how high has been, and is now, its standard. It has always been a source of encouragement to the pioneers of medical research, seeking out and giving publicity to work that showed promise ; sifting, criticizing, and giving judgment only when ascertained facts warranted conclusions. The influence that it wields in maintaining a high standard of conduct and culture among members of the medical profession is universally recognized, while its work on behalf of the interests of that profession has always been both farsighted and vigorous ; but above all has been guided and determined by a generous realization that the furtherance of the welfare and health of the community at large should be the supreme test of any policy pursued. In Ireland the *Journal* has always been a source of strength, not only to members of the Association, but to all medical practitioners. Among its many activities in this country one only need be mentioned. The campaign which it waged for over

twenty years on behalf of the Dispensary Medical Service will never be forgotten: a campaign which was inaugurated by a letter in the *Journal* and which was forcibly prosecuted by successive editors until finally reasonable conditions of employment were obtained.

It is indeed impossible to estimate fully the part which the *Journal* has played in the life and work of the medical men of Great Britain and of Ireland, and through them in the lives of the entire population not merely of these Islands but of the whole world. Both in times of peace and in times of war the *Journal* has always been in the forefront of medical publications, and has always been quick to supply information and guidance concerning the medical needs of the moment; the present crisis is an example. New demands are being made day by day on physicians and surgeons alike; new problems are constantly arising, and in all these problems reliable and up-to-date information is to be found in the articles which appear weekly in the *Journal*. The *Journal* can now look back with pride and satisfaction on one hundred years of splendid service, but can also look forward, I feel confident, to a future of still greater work. When the present storm is over and peace once again prevails, one feels certain the *Journal* will play a great part in the work of social reconstruction which lies ahead, and that when it comes to celebrate its two hundredth birthday it will be then, as now, the leading medical journal in the English language.

Dr. Thomas Fraser, President of the British Medical Association; Consulting Physician, Aberdeen Royal Infirmary:

Let me heartily congratulate you on the occurrence of this important milestone in the history of our *Journal* during your distinguished leadership. That the Centenary of the *Journal* should have followed the memorable Annual Meeting of the Association in 1932 at so short an interval as eight years is a great tribute to the understanding and vision of our first leaders. The outstanding part the *Journal* has played in the development and prosperity of the Association and in the attainment of its present position of power and influence in medicine and in the State is generally recognized—particularly by those who have taken an active part in Association work over long periods. In my experience the greatest crisis the Association (and general practice) has passed through was in the years preceding the passing of the National Health Insurance Act. The possession then of an ably conducted *Journal* made a contribution of inestimable value to the success which attended the efforts of the Association in that struggle. The intervening years have shown no diminution in development and advance, and the *Journal* of to-day gives abundant evidence of the energy and enterprise of its Managing Committee and of the ability of its Editor and his colleagues, and justifies the highest hopes for its future.

Sir Girling Ball, F.R.C.S., President of the Royal Society of Medicine:

In these days, when the deeds of evil are holding such a predominant position, it is sad to think that we should have to celebrate the centenary of the *British Medical Journal* under such unfortunate circumstances. I can envisage this occasion in times of peace as being commemorated with great joy and celebration.

The *British Medical Journal* has always fearlessly exercised, on behalf of the ranks of the medical profession, those great prerogatives which characterize democracy alone. As President of the Royal Society of Medicine, therefore, it gives me the keenest pleasure to have this opportunity, on behalf of the five thousand Fellows and Members of my Society, to send you warmest congratulations upon the first century and sincere good wishes for the following centuries of the life of the *British Medical Journal*.

Mr. Herbert L. Eason, President of the General Medical Council, and Principal of the University of London:

One usually congratulates a centenarian with the depressing feeling that, though the congratulations may flatter his senile vanity, his dissolution is imminent. In quite a different spirit I congratulate the *British Medical Journal*, which, in its hundredth year, is younger and more virile than ever. Of the benefits it has conferred upon the medical profession it were superfluous to speak. May it long continue to record the advances in the science and art of medicine and to act as a wise leader in medical politics.

Surgeon Vice-Admiral Sir Percival Nicholls, K.C.B., Medical Director-General of the Navy:

It gives me very great pleasure to offer my heartiest congratulations to the *British Medical Journal* on the occasion of its centenary. The issue of a centenary number must be an occasion rare in the annals of journalism.

All over the world, in lonely outposts of the Empire and on board H.M. ships in foreign waters, the arrival of the mail not only means letters from home but also the arrival of the copy of the *British Medical Journal* for the doctor. The whole wardroom takes a lively interest in the arrival of the doctor's "*B.M.J.*," and feel that it is his link with all that is new and progressive in the medical world. Those of us who remember that satire on life in the Tropics, the play called "White Cargo," will recall how the doctor in his degradation still tries to keep up appearances by letting all and sundry know that his copy of the *British Medical Journal* has arrived. I feel sure that all medical officers in the Service have an affection for the *British Medical Journal* and would join me in congratulations and in wishes for its continued success in the years to come.

Lieut.-General Sir W. P. MacArthur, K.C.B., Director-General, Army Medical Services:

I wish to send you, as Editor, my felicitations on the completion of the *British Medical Journal's* hundredth year of publication. Had the anniversary fallen somewhat sooner I might have become lyrical over the humanizing influence of the past century, and the accompanying extension of medical science as recounted in your pages through all these years. But something has gone awry with the world, and civilization has slipped back. So that to-day the energies and ingenuity of our profession are bent to discover new methods of alleviating the physical sufferings and mutilations wrought by all the devilry that organized barbarity can devise. In the recording and dissemination of the beneficient results of these labours your journal will take a leading part, while avoiding (as it is your earnest endeavour) right-hand snares and extremes, and left-hand wayslidings; and thus maintain the high ideals of medical literature which I know you foster and cherish. I wish you prosperity, and a safe issue out of these perilous times.

Air Marshal Sir Victor Richardson, K.B.E., Director-General of Royal Air Force Medical Services:

This year the *British Medical Journal* reaches its hundredth birthday in a life of service to the medical profession.

It requires but little perspicacity to see that the *Journal* fulfils an important function in the life of medical men, for it provides not only an open platform for the profession but also it mirrors every aspect of medico-political

life. By its liberality of outlook and by the maintenance of the highest standard of professional literature it does much for all medical men wherever or however they may be carrying out their work ; its special articles and surveys have proved of universal value and interest, and its columns during the present war have been of particular use in disseminating knowledge of various aspects of war medical organization. In these amongst its many activities the *Journal* provides close contacts for doctors, and thus goes far to cement their lives and interests.

This year, too, the medical service of the Royal Air Force became of age, and it is appropriate in this happy coincidence of birthdays that the medical officers of the Royal Air Force should ask me to convey their sincere and hearty congratulations to the *British Medical Journal*. and particularly to those responsible for its aims and policy for their so admirable achievement of these.

Sir Thomas Barlow, Bt., F.R.S. :

The centenary of the *British Medical Journal* is an occasion for cordial congratulation. The high standard of literary ability and of general tone in medical policy which now prevails dates, in my opinion, from the editorship of my friend and former pupil, Dr. Dawson Williams. The improvement which he brought about has been increased by you and your colleagues.

As president of the Royal Medical Benevolent Fund I would like to acknowledge very warmly the ever-ready support given by your *Journal* to charitable objects affecting medical men and their families.

I am sure that the *B.M.J.* has in the future an important role to play in maintaining the high standard of British medicine and surgery and cementing good fellowship between the members of our profession.

Sir Humphry Rolleston, Bt., G.C.V.O. :

The completion of its first century as a medical publication is an occasion for warm congratulations and an expression of sincere gratitude to the *Journal* and its succession of devoted editors. In the past it has emerged with increased power from crises, though none quite comparable to those at the moment ; it is certainly doing so now, and a similar issue can be confidently anticipated.

Sir Arthur Keith, F.R.S., Master of the Buckston Browne Farm, Downe :

For more than half the lifetime of the *B.M.J.* I have shared in its friendship and fellowship, for I became a reader while a student at the University of Aberdeen in the eighties of last century. All through my time the *Journal* has been a living agent, bringing medical men of all kinds into touch—welding anatomists, physiologists, and anthropologists, and family physicians and medical consultants into a unified working co-operative society. My personal indebtedness to its Editors and to its pages provides one of my most pleasant memories. It was its pages which brought me some of my most valued friends. You may face your coming century with confidence with such a record behind you.

Sir Henry Dale, F.R.S., Director, National Institute for Medical Research :

Greetings to the *British Medical Journal* on its completion of a hundred years of unbroken and honourable service to medicine and to medical men! Those hundred years, and even their latter half, have seen greater changes in medicine than all the centuries which went before, since human records began. They have seen experimental science opening new vistas of knowledge, and offering it through medicine to the service of human need ; and they have seen medicine itself taking rank as a science in its own right. May the present halt of that progress, and the need to fight for its peaceful renewal, soon be as evil dreams of the past, and may a second century find the *Journal* still at its worthy task—encouraging progress in a medicine beyond the reach of our imagination, and interpreting its practical meaning to our far successors.

Sir Edward Mellanby, K.C.B., F.R.S., Secretary of the Medical Research Council :

It would be difficult to imagine a greater public service than that rendered by the *British Medical Journal* during the past hundred years in reporting to the medical profession and interpreting for its benefit the innumerable advances in knowledge of prevention and cure of diseases as they have been discovered. In fulfilling this duty, with fine discrimination and high ethical standards, the *Journal* has had enormous success, and the constant appreciation of the profession which has resulted therefrom must have brought great pleasure to its editorial and administrative staff.

In congratulating the Association on the centenary of its journal I wish in particular to convey the thanks of the Medical Research Council for all the good will and splendid help given to the Council in disseminating knowledge of the discoveries of their workers during the past twenty-five years.

Sir Wilson Jameson, Dean of the London School of Hygiene and Tropical Medicine :

It can be no easy task to make one periodical serve the dual purpose of the weekly journal of a great Association and a serious medical publication. Yet the editors of the *B.M.J.* have done this successfully for a hundred years. May they go on doing it for hundreds more.

Sir Henry Newland, Chairman, Federal Council of the B.M.A. in Australia :

Hearty congratulations from Federal Council on completion of century of service to science and humanity by *Journal*.

FROM THE EDITOR OF THE "LANCET"

Dear Editor,—On Friday morning I un-zipp your *Journal*—as I hope you do mine—with a pleasant thrill of expectation, not unmixed with a certain trepidation that you have spoken more truly of some new happening or dealt more wisely with some difficulty. This is one of the most powerful hormones in producing the full blossom of medical journalism. And in our case it is tempered by the affective tone of a common heritage, for we were bred in the same school and my journalistic life began as your successor here. My birthday greetings are therefore not only warm, but discerning.—Egbert Morland.

CABLES FROM EDITORS OVER-SEAS

Dr. Morris Fishbein, Editor of the "Journal of the American Medical Association":

Congratulations hundred years scientific leadership. Civilization will triumph and you will celebrate many hundreds additional.

Dr. Mervyn Archdall, Editor of the "Medical Journal of Australia" :

The *Medical Journal of Australia* sends greetings to the parent journal on its centenary and trusts that in the difficult days that lie ahead it will find increasing opportunities to serve the cause of humanity with the same devotion and singleness of purpose that it has always shown.

Dr. A. G. Nicholls, Editor of the "Canadian Medical Association Journal":

Cordial greetings and hearty congratulations to your *Journal* on the completion of its centenary.

Mr. C. Louis Leipoldt, F.R.C.S., Editor of the "South African Medical Journal":

Sincerest congratulations on your centenary from *South African Medical Journal*, Editor, and Journal Committee.

Prof. L. E. Napier, Editor of the "Indian Medical Gazette":

Indian Medical Gazette, oldest medical journal in East, congratulates *British Medical Journal* on hundred years successful and invaluable publication and sends best wishes for future.

"AMERICAN HOSPITAL IN BRITAIN"

THE U.S. MEDICAL UNIT

A unit of medical men and nurses representing the "American Hospital in Britain," which is the name of an incorporated society in the United States, arrived in this country at the beginning of September, and after a survey of the casualty hospitals in Lancashire and London settled down on September 25 as a section of the Park Prewett Hospital. The unit is led by Dr. Philip Wilson, professor of orthopaedic surgery at Columbia Medical School and chief surgeon to the Hospital for the Crippled and Ruptured, New York. Accompanying him are Drs. C. H. Bradford, D. Emery Dial, W. R. Ferguson, and F. W. Walking, all of them orthopaedic surgeons; Dr. Norman Egel, a general surgeon; and Dr. J. M. Converse, a surgeon specializing in facial and maxillary work. There are also three nurses and two women secretaries. The original design of the unit was to establish in this country an American hospital as an entirely separate institution, although functioning within the Emergency Medical Service, but the strange course of the war has made necessary a modification of this plan. The unit is, of course, entirely civil in character.

The Scheme's Distinguished Sponsors

The enterprise was started in the United States soon after the outbreak of war, when Professor Osgood of Boston, who had been a member of Sir Robert Jones's staff in this country during the war of 1914–18, made plans for a contingent of American orthopaedic surgeons to assist Great Britain. Professor Osgood's efforts were energetically seconded by Dr. Philip Wilson, who was himself in France with the American Ambulance in 1915 as a member of the Harvard Unit (one of several university units which were sent over at that time) and later served as surgeon in the American Expeditionary Force in 1917. Dr. Wilson enlisted the help of American well-wishers to the Allied cause in many centres, and a large number of generous contributions were made; one donation of £1,000 was given by a woman of wealthy parentage upon whom when she was a child Dr. Wilson had operated. A medical board was formed consisting of prominent medical men representative of American universities—namely, Columbia, Cornell, Harvard, Johns Hopkins, Michigan, and Chicago—together with other physicians and surgeons.

First Home at Park Prewett

The project began and continues as predominantly orthopaedic in aim. It was hoped to establish in this country an American hospital of 1,000 beds, staffed by American physicians and surgeons, with a radiologist and pathologist, and some American nurses. It was still with this ultimate goal in view that the unit arrived as a kind of advance guard in this country, but as the conversations proceeded it became clear that there were not enough casualties at present to justify the setting up of a separate hospital to be run under American auspices. The casualties sustained by the British Expeditionary Force are being discharged from the hospitals, and the air-raid casualties are being dispersed among innumerable hospitals in various parts of the country. Therefore it was agreed that the unit should form a group or section in one of the existing institutions. The first week after landing at Liverpool was spent in visiting various hospitals in the North-Western Region under the guidance of Prof. Harry Platt of Manchester, one of the Ministry of Health's consultants in orthopaedic surgery, who has acted as a link between the Ministry and those concerned in this development on the other side of the Atlantic. The unit then came on to London, receiving a most friendly welcome from the Ministry of Health and other official bodies, and after a survey of the hospital situation it was decided that it should take over a section of Park Prewett, which in ordinary times is a mental hospital of 1,450 beds. It is a hospital where general surgery is done, but it has no orthopaedic centre, and it is intended that the unit shall develop that aspect of surgical work. At the same time employment will be found in the department established at this hospital by Sir Harold Gillies for the member of the team specializing in facial and maxillary surgery. The unit has brought with it about fifty cases of supplies and equipment in the shape of surgical instruments and dressings, and it commands an income of £50,000 for the first year's work.

Organization and Future Plans

Dr. Wilson in a talk with a representative of the *Journal* made it clear that the idea of a separate American hospital has by no means been dropped. Should the war become still more intense and casualties be largely multiplied, the unit, reinforced by fresh arrivals from the States, would endeavour, with the good will of the Ministry, to proceed to the establishment of such a hospital. But Dr. Wilson and his colleagues are here not to make difficulties or to stand upon national exclusiveness but to be as co-operative as possible. Asked how long it was intended that his team should remain in this country, Dr. Wilson pointed out that most of its members occupied positions of responsibility in their own land and had made considerable personal sacrifices to come over; therefore the period of service of any one member cannot be indefinitely extended. It is hoped to replace those returning by fresh arrivals from the States. Dr. Wilson himself expects to be leaving this country at about the beginning of January; indeed, he has been given only four months' leave of absence from his university post. On returning it will be his job to maintain the flow of replacements of the right quality.

As to the organization in the United States which is at the back of this endeavour, Dr. Wilson said that the financial side was arranged through the Allied Relief Fund, which theoretically is available for any form of humanitarian work, including medical. The "American Hospital in Britain" was formed by Dr. Wilson last May, with its headquarters in New York City. Dr. Wilson himself is the medical director, and there is a board of trustees of which Mr. W. C. Osborn is president, as well as an advisory medical board of more than twenty medical men from New York, Boston, Baltimore, St. Louis, Chicago, San Francisco, and other cities.

The organization is incorporated as a society under the laws of the State of New York and it has a business director as well as, under Dr. Wilson, an assistant medical director, who is now actively engaged in checking the qualifications of applicants desiring to enlist, and in keeping this generous idea before the sympathetic public and medical profession of America. It is very likely that even for the present fairly limited venture more people will be needed. Dr. Wilson has cabled with a view to forming a neurosurgical team which is desired by the Emergency Medical Service, and which would be accompanied by its own *x*-ray and laboratory technicians. It is also Dr. Wilson's desire to carry out some research in addition to clinical work, and he has been in touch with Sir Edward Mellanby so that anything that may be done in this respect may be linked up with the work and aims of the Medical Research Council.

The medical profession in Great Britain will appreciate the generous gesture of good will, as well as the substantial help, which this American organization has made and has brought to the common service in which they are all engaged.

MEDICAL WAR RELIEF FUND

Owing to delays in postal communications the following contribution was omitted from the first list of subscriptions to the Medical War Relief Fund published at p. 427:

Dr. Egbert Morland .. .. £10 10s.

The second list will appear in next week's issue of the *Journal*.

HEALTH OF THE ARMY IN INDIA

REPORT FOR 1938

The annual report (for 1938, but only just received) on the health of the Army in India[1] reveals malaria as the principal cause of sickness in officers and men. In 1937 among officers dysentery had the first place, but in that year the malaria incidence was the lowest so far recorded, and even the figure for 1938 is only 50% of that which obtained ten years ago. In 1919 the malaria incidence for British troops was 217 per 1,000, and for Indian 145; the respective figures for 1938 were 50 and 109. The considerably higher incidence among Indian troops is in part due to the fact that they tend to go out of the protected cantonment into infested bazaar areas, and also proceed on leave away from cantonments. The decline to an almost insignificant figure of the incidence of the enteric group of infections is due largely to the increasing care which is given to the production of T.A.B. vaccine, though improvements in water and milk supplies, protection and care of foodstuffs, and a reasonable standard of sanitation in cantonments are also factors. The enteric fevers, which are endemic throughout the country, and in places epidemic, have now been reduced in the Army to a case incidence of less than 1 per 1,000 both for British and Indian troops. Cholera was epidemic in many parts of India during the year, but the incidence among military personnel, except in one restricted outbreak, was negligible.

Effects of Heat on Troops

An increase of 30% in admissions for heat stroke and the doubling of cases of heat exhaustion in the Army in India are noted, though the figures are not large—twenty-two cases of heat stroke with six deaths, and sixty-five cases of heat exhaustion with one death. The Director of Medical Services comments that heat stroke and heat exhaustion are not inevitably caused because men are engaged on hard physical duties out in the open, but reasonable precautions must be taken, ample drinking water be available, clothing and food suitably adjusted, and attention given to any man who appears to be "off colour."

Extra issues of salt have been made as a prophylactic against boils and prickly heat. A daily excess loss of salt in perspiration which is not made good in the food seems likely after two or three months to produce a deleterious effect on the general tone of the body, and particularly of the central nervous system. It has been found from observations made at Peshawar that the salt loss is 6.8 grammes, or almost 1/4 oz., for a normal route march of nine miles in the hot weather in that locality. The water requirement of a man travelling such a distance in a temperature of 104.3° F. in the shade and a relative humidity of 47% is approximately six pints if real fighting efficiency is to be maintained, and to this must be added the amount of common salt which has been lost during the day, estimated at practically 1/2 oz. The use of increased salt is regarded as well worthy of consideration in preventing heat stroke, and more particularly heat exhaustion.

[1] *Annual Report on the Health of the Army in India for the Year 1938*. Vol. I. Issued from Army Headquarters, Medical Directorate, New Delhi. (Government of India Press, New Delhi. 1940. 5s. 3d.)

According to the *Medical Record*, the $100,000 mobile tent hospital, designed principally by Dr. Alexis Carrel, will be placed on exhibition, probably at the World's Fair, before it is sent over-seas. The unit, which will accommodate 100 patients, consists of several large and small tents and a fleet of twenty-six auto trucks and trailers.

THE HOSPITALS' WORK IN AIR RAIDS

MR. MacDONALD'S TRIBUTE

At a meeting held on October 1 at the Leicester Square Theatre, Lord Luke received the following message from the Minister of Health in connexion with the Combined Hospitals Flag Day next Tuesday, October 8.

Ministry of Health,
Whitehall, S.W.1.
October 1, 1940.

DEAR LORD LUKE,

I am very sorry indeed that urgent public duties elsewhere prevent me from coming to your meeting to-day; but I welcome the opportunity of sending you and your colleagues a message of firm support and encouragement. There cannot be anyone at this moment who is not deeply conscious of the work of the London voluntary hospitals. No feature of London's superb resistance in its present ordeal surpasses the way in which the hospitals have performed their duty.

It has become almost commonplace to speak of devotion, sacrifice, allegiance in the hospitals' work; but surely now these terms are all quickened with a new reality. Under almost nightly bombardment, with every sort of accompanying difficulty, the London hospitals are just coolly carrying on. Doctors, nurses, and general staff have risen completely to this most historic occasion. Not only in the day, but at all hours of the night they have been called upon to receive patients; their reception and treatment have proceeded without any hitch except those inflicted by the enemy. Sometimes a hospital has been compelled to evacuate its patients in the middle of the night, and that difficult operation has been carried out forthwith with remarkable speed and smoothness. Occasionally a ward has been struck, and then the work of rescue performed by hospital staffs has been as heroic and devoted as that of any of the civilian-soldiers in this war. In all these various ways the hospitals have saved thousands of lives during these last few weeks alone.

These experiences are the best tribute to the excellent organization of the hospital service in war and to the skill, resource, and courage of those engaged in it. Next week, then, is everybody's chance to show that they are conscious of the work of these gallant organizations. I do not think that the public will fail to take it.

For my part, let me say simply that it seems to me that at no time in their history have the London hospitals been more deserving of generous public support. Perhaps some people have the mistaken impression that responsibility for the hospitals has been completely "taken over" by the Government for the duration of the war, and that consequently the need for voluntary generosity is diminished. Let me correct that at once, and emphatically. The Government are, of course, paying the hospitals for war casualties, both military and civilian, treated in them, and also for maintaining beds in readiness for the reception of casualties. The Government are not, however, contributing to the upkeep of the voluntary hospitals for their normal purposes any more now than they were before the war—and, indeed, the hospitals would not wish them to do so, for they maintain independently their tradition of caring for the sick poor of London, no matter how difficult and arduous that has become. The increased hazard and difficulty of their work should be reflected now, more than ever, in a spontaneous increase of public support.

A danger of these occasions is that of sentimentality. Let us be quite clear. The need for the public to help the London hospitals is founded on hard reality. These hospitals are now, as they have always been, the nerve-centre of the treatment of the sick in London; if they were vital before the war they are doubly vital now, in their new role of refuge not only for the victims of the incessant air bombardment which is testing the whole strength of the capital, but also for those who are ailing and who cannot be removed further afield. Their work is in the very front line of our war effort; it is going on under every sort of strain and anxiety with a fighting spirit which nothing from the enemy's side will break. It is up to us all to see that this effort is not sapped from our own side by any reluctance to pour the necessary support into the hospital funds.

Yours sincerely,

MALCOLM MACDONALD.

Correspondence

Blood Transfusion in the B.E.F.

Sir,—An annotation in the *British Medical Journal* of August 10 (p. 196) suggested that some account of medical experiences in the recent Battle of France, including that of the Army Blood Transfusion Service, would be welcome. Now that the reports of the nine transfusion officers have been received I am authorized to submit the following conclusions therefrom.

The highly mobile type of warfare imposed great difficulties upon organization. Fewer casualty clearing stations were able to operate at any one time than is usually the case, so that some transfusion officers were always unable to function, while others were overworked. All casualty clearing stations were subjected to heavy aerial bombardment.

The rapid response of the Army Blood Supply Depot at Bristol permitted the stocking of the mobile refrigerators at the casualty clearing stations, which had previously held only small quantities of blood, and within four to five days each of the eight teams attached to casualty clearing stations, and one attached to the Medical Base at Boulogne, had received some 60–80 pints of blood and a certain amount of plasma. Glucose–saline solution had already been accumulated in most of the casualty clearing stations, from the Base and Advanced Depots of Medical Stores. One casualty clearing station was made an advanced blood store, provided with extra quantities of blood and given transport so that it could distribute blood when required to the other casualty clearing stations. After this initial provision of blood and plasma, road conditions (refugees, bombing, etc.) precluded further supplies. The knowledge that further supplies were unobtainable engendered a certain degree of conservatism in the transfusion officers, who felt themselves obliged to withhold blood or plasma from some severely wounded patients, many of whom under other circumstances would probably have received intravenous therapy.

All the transfusion officers report without exception that they were satisfied with results obtained in suitable patients by the use of blood or plasma. The generous equipment provided by the Army, each bottle of fluid being accompanied by an apparatus for administration, was ideal for active service conditions and enabled blood, plasma, or saline fluid to be administered under almost any circumstances. The trying conditions under which the officers worked prevented in most instances the keeping of detailed notes on their patients, and without these it is only possible to make certain generalizations about the values of blood, plasma, and glucose–saline.

All types of wounded cases were treated. All medical officers of the Service stress that sufficient quantities of blood or plasma must be given, and that failure of a severely wounded and shocked patient to recover after 2–3 pints of blood or plasma probably means that further quantities must be administered, and that at the same time other measures of resuscitation must be persistently applied.

Some amazingly good results were obtained in apparently moribund patients, and undoubtedly many lives were saved by the Service. The type of case which benefited most was the bombing casualty in the vicinity of the casualty clearing station who was brought in quickly. Relatively few cases of severe shock were encountered; it is likely that, as always, many died on the field of battle or on their way to the casualty clearing station, and transport difficulties undoubtedly contributed to the delay and so to mortality.

It was naturally impossible to follow the course of the transfused patients. In only one report is any mortality figure given; it is stated that of those brought from the field of battle (as distinct from near-by bombing casualties) 25% died before they left the casualty clearing station. Lateness of arrival at the casualty clearing station and inability to institute organized and efficient chemotherapy for gas gangrene are adduced as the possible causes of the high mortality.

Few details are available about the use of plasma, of which there was comparatively little in Flanders. The only conclusion one can justifiably reach is that its use gave good results in cases of shock, provided haemorrhage was not severe.

The number of transfusions given cannot be exactly stated. One may say with confidence, however, that some 350–400 pints of stored blood and plasma were used between May 10 and the evacuation from Dunkirk.

Certain technical points merit notice. Cannulation was required in surprisingly few instances—13% at one casualty clearing station and 2% at another—although large quantities of blood were given to single patients. Cannulae were of use during aerial bombardment, when restlessness and nervousness increased among the wounded. The incidence of reactions following the administration of stored blood was negligible. The oldest blood used had probably been bottled for three weeks; an extreme instance was the successful administration of blood seven weeks old. All reports emphasize that transport over appalling roads for long distances seemed to have had little ill effect on the blood; no increased haemolysis was encountered. In one case the cells and plasma were barely mixed after being transported from near Arras to Brussels (approximately 100 miles) in a mobile refrigerator. A good idea of the general working conditions and of the utility of the apparatus is given by the following quotation: "Transfusions were given to patients in beds, on stretchers, in clean rooms, in hovels. . . . Asepsis did not exist, antisepsis in most cases was almost impossible to achieve. I am convinced as a result of this experience that a transfusion could be given in absolutely any circumstances except in a vehicle." And there is doubt about the last conclusion.

While it is impossible to present an imposing array of detailed case histories or conclusions as to the relative merits of stored blood and plasma, or the types of patient who benefit most, the experiences of the Army Blood Transfusion Service in Flanders have shown that, to obtain any success with blood and plasma transfusion, severely wounded men must be treated early. To achieve this, either there must be an efficient and rapid system of transporting the wounded from the field to the place of treatment, or supplies of stored blood or, preferably, plasma, which does not require refrigeration, must be made available at medical units further forward than the casualty clearing stations. Secondly, any unit which is to receive and operate on wounded must be adequately equipped for resuscitation: a ward or room should be set aside near the operating theatre for this purpose, where the necessary apparatus (hot cradles, hot water bottles, oxygen cylinders, and masks, etc.), instruments, drugs, dressings, blood, plasma, and glucose–saline are concentrated, under the supervision of one or perhaps two medical officers and their assistants. To this ward, only cases requiring resuscitation should be admitted, and the medical officer in charge should have enough experience to enable him to judge which cases are sufficiently resuscitated to have a reasonable chance of surviving operation.—I am, etc.,

W. D'A. Maycock,
Captain, R.A.M.C.

Sept. 25.

Volume and Rate in Blood Transfusion

Sir,—In your issue of June 29 (p. 1043) we published an article setting forth our views on volume and rate in blood transfusion for the relief of anaemia. In this article we recommended very slow transfusion. We had thought that it was made quite clear that the principles stated were confined to the treatment of cases of anaemia uncomplicated by acute haemorrhage or by shock, and therefore not suffering from reduction of blood volume. We are sorry to learn that, as a result of our communication, slow-drip transfusion has been applied by some to cases of shock and haemorrhage. Nothing is further from our ideas.

In shock or haemorrhage the patient is in danger of rapidly dying from the consequences of gross reduction of blood volume. The fundamental necessity is to restore it with the minimum of delay. Transfusion, therefore, should be rapid—that is, at the rate of a pint in fifteen minutes, or even faster for bad cases. The volume transfused should depend upon the severity of the shock. N. M. Keith (1919, M.R.C. Shock Committee Reports, No. 26, viii) showed that a systolic pressure of between 70 and 80 mm. Hg indicated a loss of

approximately 30% of the blood volume, and a pressure below 60 mm. Hg a loss of over 35%. These figures mean in an average-sized adult losses of 1,600 c.cm. and over 1,900 c.cm. Our own experience confirms the truth of these figures, and we believe that patients showing significant reduction of blood pressure from shock and haemorrhage require transfusions of blood or plasma of one and a half to four pints (850 c.cm. to 2,270 c.cm.) according to the severity of the case. These volumes should be regarded as applying to actual blood or plasma, and not as including diluent fluids such as saline, citrate, or glucose solutions, which rapidly leave the circulation. Such volumes can and should be given fast to these cases, though modification may be necessary when there are uncontrolled internal bleeding-points.

We trust that we shall be able to make a fuller contribution on this subject at a later date.—We are, etc.,

H. L. MARRIOTT,
Major, R.A.M.C.
A. KEKWICK,
Captain, R.A.M.C.

Treatment of Wound Shock

SIR,—In the Medical Research Council's excellent War Memorandum No. 1 it is advised that when shock is developing measures to restore the blood volume should be applied early, and that two to four pints of blood, plasma, or serum are needed. This is going to be a drain on the blood transfusion service now that air-raid casualties are occurring in such numbers. The claims put forward for blood transfusion in the treatment of shock during the last war were never realized in later years in the treatment of post-operative shock, and I am doubtful if early blood transfusion after operation does prevent its onset unless there has been much haemorrhage.

My practice is to give a blood transfusion two days before the operation, when the general condition is not good or if haemorrhage is to be feared. If at the operation it is thought that shock may arise the patient is given intravenously on the table one pint of 10% glucose at 105° to 110° F. containing 20 units of insulin. If there is no improvement this is repeated in an hour's time when the patient has been returned to the ward, 2 c.cm. of anacardone being added. If advisable, continuous intravenous glucose may be given, a 5% solution being used and 10 units of insulin being added to each pint. Or this may be given per rectum, coffee being added. This replaces any fluid lost from the surface of the body, which is all the greater if the electric cradle is employed.

Some years back I was a little concerned over the vomiting that occurred after operation. Those working in mental hospitals had shown that paraldehyde and the barbiturates could be given over long periods with little ill effect provided the patient was taking larger amounts of glucose. Glucose given before operation did undoubtedly lessen the disturbances after an anaesthetic. So it was given intravenously after operation, and these disturbances almost disappeared. It was noticeable that the pulse became slow and bounding and the blood pressure raised. In two young men in whom the appendix had been removed the rise in blood pressure was so great that it was considered advisable to withdraw blood. It seemed that the glucose acted as a stimulant to the nerve cells. This seemed to be the very thing for which we were looking in the prevention and treatment of shock. Insulin was added, because once shock develops not only is the vitality of the body low but the function of each organ is impaired—and that of the pancreas must also suffer. In my experience a blood transfusion is invaluable if there has been much haemorrhage during the operation. Glucose given intravenously does seem to prevent the onset of shock. And when this has developed it acts better than a blood transfusion. The procedure is the same in cases of injury. A blood transfusion is given only if there has been haemorrhage. Otherwise glucose is employed. The patient desires a drink, but he should be allowed only to moisten the lips and mouth. He should not be allowed to swallow this, as vomiting may interfere with the anaesthetic. It is much safer to give fluid per rectum. Coffee can be added to this.

Where severe pain is present 1/6 grain morphine should be given and if necessary repeated in an hour. But the less morphine he has the better. For it is a depressant not only to the respiratory and cardiovascular systems but to the vital power of the tissues generally, and this is already low in shock. Dilaudid grain 1/20 repeated in an hour relieves pain almost as well and is less depressing. My preference is for opoidine (Macfarlane) or omnopon (grain 1/3), repeated when necessary. These contain the total alkaloids of opium, and though opoidine includes 1/6 grain of morphine it is not so depressing as this dose of morphine given alone, and has fewer after-effects. It does not, however, relieve pain to the same extent. To counteract any depressing action of opoidine, 1 c.cm. of anacardone is given at the same time. The fact that the patient continues to groan does not necessarily mean that he is suffering pain. This seems to be of the nature of a mild delirium, possibly due to the anaemia of the brain, and disappears when the general condition improves. It is relieved by 1/200 grain of hyoscine or scopolamine, repeated if necessary in one hour. This adds to the comfort of the patient and to those around.

It is well for those who are undertaking the treatment of shock to keep an open mind, for the problem is still far from being solved. Few air-raid casualties have so far passed through my hands, but it seems to me that there is some difference between the state of shock seen and that seen after gunshot wounds in the last war, though it is not possible for me to define this difference. I am told that some of those who were killed in some raids could hardly be recognized as human beings. They were pulped into a mass of flesh. I have little doubt that added to the shock in those who survived was a state of concussion, sometimes of a severe degree.—I am, etc.,

Cardiff, Sept. 24. T. E. HAMMOND.

Treatment of Non-haemorrhagic Shock

SIR,—Recent papers in the *Journal* and your leading article of August 31 (p. 290) appear to ignore, in the treatment of shock, two leading points.

First, it is common sense that shock from loss of blood should be treated by immediate transfusion. Secondly, in non-haemorrhagic shock the blood is in the body and in the wrong place—the mesenteric veins. If we can restore blood to the brain and heart, the lack of which is so clearly proved to be the cause of death from shock, we give the patient the best chance of recovery. The simplest, quickest, and most efficient way of doing this is by inversion of the patient. If the patient be admitted to hospital on a stretcher the ankles can be tied to the stretcher handles by a four-inch strip of blanket, with a clove-hitch, and the foot end of the stretcher raised and placed against a wall at an angle of from 45 to 75 degrees with the floor, the head of the stretcher being against transverse graduated strips of wood forming stops nailed to the floor if indoors. The force of gravitation alone on the blood in the veins at these angles very quickly restores the patient's colour, pulse, and respiration, and is, in fact, the simplest form of blood transfusion. The patient must be watched and the slope of his body varied as necessary, judging by his colour. The rapidity of improvement in his colour and condition is most striking. If it is not, internal haemorrhage must be suspected. In the open this plan can be applied by the simple method of the bearer at the foot carrying the handles of the stretcher on his shoulders.

This treatment can be put into force at once by first-aiders, the patient being warmly wrapped in blankets, especially in parts of this district where they may have to be driven fifteen miles to the nearest point where they could obtain transfusion treatment if it were thought necessary.—I am, etc.,

Faversham, Sept. 27. PRIDEAUX SELBY.

The Teaching of First Aid

SIR,—For years the various societies interested in spreading a knowledge of first aid have been trying to find the answer to the following questions: (1) Must we continue to allow our certificates, etc., to be awarded to inefficient persons? (2) If we insist on an efficiency standard will there be a marked falling off in future enrolments? (3) Will such falling off seriously embarrass us financially or otherwise? The difficulty is that the work is done voluntarily, there being no compulsion on students to attend lectures or to finish a

course once they have enrolled. Also no recognition is given to first-aiders or their work. If we are to insist on certificates denoting efficiency, then industry and the public must give some worth-while encouragement to those whose work and knowledge can save many lives and much money. The war has proved, and is proving, the value of the well-trained ambulance man, and it would be of immense advantage to all if first-aid certificates could in every case denote that the holder was reasonably capable in his work. This would, of course, call for triennial or other efficiency examinations and the viewing, by the medical profession, of the whole situation in a totally new perspective. As regards training for wartime first aid the thing that matters is how much each pupil learns to do for himself. The lecturer should talk for from twenty to forty minutes, the remainder of the two hours being occupied by practical work. Every member of the class should himself apply bandages, slings, fracture splints, etc., until proficiency is attained, and practise artificial respiration on his classmates until he can do it correctly and the right speed becomes automatic. He should know all about the treatment of shock, haemorrhage, etc., and be able to apply digital compression to any of the proper arteries instantly. Team work for big fractures should be instituted so that each student could take any place in any team, this team work being continued for transport of the injured, a very important part of the work which is often neglected. Everything the student is asked to do should be carried out as if he were attending an actual case where delay might mean death. In this way it is possible to turn a novice into a fairly reliable first-aider in eight to ten attendances at weekly classes if the novice is keen.—I am, etc.,

Bowman Edgar, M.B., Ch.B.,
Lecturer and Examiner, St. Andrew's Ambulance Association and B.R.C.S.

Kirkconnel, Dumfriesshire, Sept. 22.

Civilians Blinded in Air Raids

Sir,—Lord Nuffield, who has always been a most generous friend of the blind, has just sent me a cheque for £10,000 in the hope that it may be used to help those who become blind or their dependants. Serious injuries to the eyes must occur daily in the bombed areas, and it is probable that in many instances they will lead to permanent blindness. May I beg you to make known the fact that the National Institute for the Blind, of which I am chairman, in conjunction with the local societies for the blind and the responsible local authorities throughout the country, has a plan laid down for assisting blind civilians in all possible ways. I shall be deeply grateful if your readers will let me have at the National Institute for the Blind, 224, Great Portland Street, London, W.1, particulars of any men, women, or children whose sight has been injured during the air raids, so that they can immediately be brought within the scheme of assistance.—I am, etc.,

Sept. 27. E. B. B. Towse.

Physical Training

Sir,—In the *Journal* of September 7 (p. 324) you had a leading article on the proposed national scheme for the physical training of all young people between the ages of 14 and 18. This apparently is to be conducted on the lines of the training which prevails in the Army. But before this becomes (what it is intended to be) a permanent feature of our national life there must surely be the intensive investigation you yourself advocated in a leading article after the conference in London in 1936 on all the known systems of physical culture. In that article you stated that in your opinion the whole subject was in a state of "empiricism and confusion" and required investigation from the anatomical, physiological, and psychological points of view. Nothing has been done since then and the physiology of the intact normal man has still to be investigated.

Our knowledge of physiology ends with that of the physiology of the different systems, but how their combined functionings are integrated and made to serve all the needs of man to his best advantage has never been attempted by our physiologists or clinicians. So far from being based on physiological principles which conserve and build up all our vital and physical forces and train our mental faculties, Army training can be proved to be fundamentally wrong. The imposing appearance of soldiers on the march or engaged in physical exercises is taken for granted as showing the ideal of physical development, but when photographs of them are taken and studied they show gross caricatures of the human body, and particularly in those who are instructors and exponents of the results of Army training. It has to be remembered that these men are the pick of the nation, but notwithstanding their apparent fitness and alertness it can be demonstrated on them that each one is being subjected to unnatural and unnecessary stresses and strains which are bringing all kinds of disabilities in their train. It has never been realized that the first consideration in all physical culture is to establish the basic conditions for the functioning of all our vital internal organs and not simply to develop muscle by indulging in physical jerks—an expression which implies everything that physical culture should not be.

I am sending with this letter an enlargement of a photograph taken from the *Times* of a group of "men training for fitness," in which all the men, including the instructor, are in positions of stress and strain and throwing themselves backward while they are trying to go forward. They have to lift themselves forward against gravity instead of being in the position of mechanical advantage when gravity is assisting at every step. This is only one point in the criticism, as the whole bodily poise and posture is wrong from a physiological point of view. This can be plainly seen in the second photograph of an instructor showing how to exercise his head and neck—a more grotesque caricature could scarcely be imagined.

It would be criminal if a system which can produce such results should be imposed on the rising generation and that without any attempt to remove it from the category of the systems of "empiricism and confusion." It would be interesting if these photographs were exhibited in your library or reading-room for comment and criticism, as seeing often helps believing.—I am, etc.,

Bexhill-on-Sea, Sept. 23. A. Murdoch.

*** We are entrusting Dr. Murdoch's pictures to the Librarian at B.M.A. House. They enforce his argument but would not give satisfactory reproduction in these columns. —Ed. *B.M.J.*

Treatment of Frostbite

Sir,—My attention has just been drawn to an article by Dr. Axel Odelberg (July 13, p. 43). In describing his surgical war experiences he makes the following statement:

> "In accordance with old custom the treatment of local frostbite is always the same: the patient—who is usually placed in the open air or in a cold room—has the affected part of his body rubbed with snow and afterwards immersed in cold water. More than ten years' experience at Boden and Ostermund has shown me the danger of this theoretically ill-founded treatment and the damage actually caused by it.
> "The frostbitten patient should be put in a warm room and, if possible, given a warm drink. Then the benumbed limb should be pinched and massaged from the centre towards the periphery and rubbed with a dry coarse towel: but always great care must be taken that the skin is not damaged but follows in the movement. As soon as the circulation has been restored movement is made further towards the periphery; directly a joint is passed it should be subjected to slight passive movement, but without force."

With the earlier part of this statement no one would now wish to quarrel. Rubbing with snow is generally recognized as a procedure as dangerous as it is painful, though it is recommended in some first-aid manuals. Immersion of the limb in cold water is another story. It is unlikely to do harm, and there are theoretical reasons for thinking that it might, by lessening the exudation which occurs as warmth returns, do some good.

It is, however, against the advice which follows that I wish to warn your readers. Frostbite is no longer an injury of interest only to mountaineers and polar explorers. High flying has given it new importance. Last winter's severe cold caused cases even on the ground. On no account should the

injured limb be pinched or massaged towards the periphery or in any other direction, and to rub it with a coarse towel would be criminal. Dr. Odelberg issues a warning against damaging the skin, but he apparently does not realize that the skin of a frostbitten limb is in a most delicate state, and that any rubbing may well destroy its chance of survival.

First aid in frostbite is simple. If the freezing has taken place only a few minutes before, further damage may sometimes be prevented by covering the part with a warm hand or placing it inside one's own clothes. This treatment is effective in a few minutes or not at all. The part should then be most carefully washed with some effective antiseptic, such as proflavine, and protected by many layers of wool (sterile if possible) against injury or infection. Absolute rest for the frostbitten part is essential, and when the feet are bitten a stretcher must be used for moving the patient. Antitetanic serum should be given. While these measures are being taken the patient should be given hot drinks and food and extra clothing, but no attempt should be made to warm the affected part. Thereafter he should be removed with all possible speed to hospital. The reasons for these instructions, and suggestions for after-treatment, have been published elsewhere (*Lancet*, February 17, 1940, p. 303), and are discussed at length in a forthcoming publication. My object for the moment is to neutralize any effect which Dr. Odelberg's advice may have had on those whose experience of frostbite has hitherto been slight.—I am, etc.,

London, W.1, Sept 25. RAYMOND GREENE.

Dye Treatment of Blepharitis

SIR,—Dr. A. T. Elder's article in your issue of August 10 (p. 185) does not quite deal with an unexplored problem, as he and your correspondents Mr. Cameron, Mr. Foster, and Dr. Pines (August 17, p. 238; August 31, p. 299; September 14, p. 372) appear to think.

1. Treatment of blepharitis by basic dyes like methyl violet and crystal violet is not a recent innovation, nor is the literature on it scanty. It originated with some work in 1890 by J. Stilling, who systematically explored the value of dyes in ocular affections. In the last decade of the previous century there appeared a number of papers dealing with the excellent results of pyoktanin (the trade name for methyl violet) in blepharitis. Apart from German writers, Gallemaerts in Brussels in 1895 and Ogawa in Japan in 1899 and others advocated this treatment. Stilling himself in his *Grundzüge der Augenheilkunde*, published in 1897, extols pyoktanin above all other forms of treatment for blepharitis (p. 173). In the Soviet Union dye treatment is widely used, as is pointed out in a relatively recent article by Jablonska (*Klin. Monatsbl. f. Augenheilk.*, 1936, **97**, 362).

2. At White Oak Hospital, Swanley, dye treatment has replaced all other forms of local treatment since 1935. In the five years 1935–9, 1,261 children with blepharitis were treated at the hospital, and our results have been exceedingly gratifying. Previously 52% required in-patient treatment for a period of more than one year; now it is exceptional for a child to require such prolonged treatment, three months being the usual period (Sorsby, A., *Brit. J. Ophthal.*, 1938, **22**, 174).

3. On the basis of this extensive material I should like to assure Mr. Foster that his fear of corneal complications is unfounded. The dye in the concentration prescribed for liquor tinctorium *B.P.C.* (1/2% crystal violet and 1/2% of the related methyl violet) or in a corresponding ointment form is harmless.

4. Unlike Dr. Elder, we at White Oak find the distinction between ulcerative and squamous blepharitis rather artificial. The dye is effective in all forms of blepharitis, except when marked conjunctivitis with considerable discharge constantly moistening the lids is present. Mr. Cameron's belief that refractive errors are a cause of blepharitis and that their correction is part of the treatment is not borne out by our experience. Refractions are not done as a routine in blepharitis cases at White Oak; a controlled series of 300 cases at the hospital gave no tangible difference in refractive errors as compared with the normal child population (Somerset, E. J., *Brit. J. Ophthal.*, 1939, **23**, 205).—I am, etc.,

London, W.1. ARNOLD SORSBY.

A Medical Board Deceived

SIR,—If one wished to illustrate the deceits that could be practised by a man who knew that he had suffered from pulmonary tuberculosis and who wished to enlist into the Army, it might be hard to find a more appropriate case history than the following—that of a builder's labourer, aged 45, who had served for four years in the last war.

A diagnosis of right-sided pulmonary tuberculosis was made in 1935, after an operation for ischio-rectal abscess, and the man had sanatorium treatment for two months in Yorkshire. After that he worked in various parts of the country without any breakdown in health until September, 1939. He then wanted, in his own words, to "get across to France and do some fighting," so he enlisted into an infantry regiment, concealing his history and being passed as perfectly fit both by a medical board and by the Army authorities. In January, 1940, he broke down with lassitude, increasing cough and sputum, and slight haemoptysis. He reported sick and revealed his history to the medical officer. In February, 1940, he was discharged from the Army as unfit for any form of military service, and this decision was communicated to him. Nevertheless he had been back at his old work only a fortnight when he began to feel that the country was in desperate need of trained soldiers and that he ought to join up. Accordingly he enlisted again, concealing history and symptoms for a second time from his medical board, and signing in addition an Army form declaring that he had never suffered from consumption or spitting of blood, had never been in a sanatorium for disease of the lungs, and had never been rejected as unfit for military service. He was passed as fit, and in March, 1940, he joined a pioneer battalion. He was able to carry on with his duties until the end of July, 1940, when he broke down with lassitude and a nagging right subclavicular pain. He reported sick to the medical officer, revealing his history, and was taken off duty. The man was asked recently whether the medical officer had been "vexed" when he told him his history, and the reply was, "No; why should he be vexed, when I was only trying to do my bit for my country?"

It would hardly be fair in this case to criticize the medical boards and Army medical officers who, on four occasions, passed this man as being perfectly fit, for on examination (September, 1940) the only abnormal physical signs were rather harsh breath sounds posteriorly on the right and slightly increased vocal resonance on the right, back, and front. These signs could easily be overlooked in an examination carried out in a noisy room. In passing, one might mention that miniature radiography would have shown the heart to be drawn across to the right, and would have revealed coarse mottling of moderate extent behind the right clavicle.

It is clear that this man just did not share the opinion of the medical profession that a person who has suffered from tuberculosis is unfit for any form of military service. Although he resorted to deliberate lying, a misdirected patriotism was evidently making him believe that in trying to enlist he was acting in the best interests of his country.—I am, etc.,

Barrowmore Sanatorium, Sept. 20. JOHN ASPIN.

Foetal Circulation in Right Atrium

SIR,—The author of the note on the second edition of Prof. J. E. Frazer's book on *Human Embryology* (September 21, p. 387) very properly commends it as in many respects unique. All human embryologists will, I am sure, endorse this statement, for the book represents the unbiased point of view of one who has refused to accept current, and frequently authoritative, embryological doctrine without having convinced himself of its adequacy. No worker who is seeking the true, as opposed to the slick, explanation of organogenetic problems can disregard Prof. Frazer's contributions to our knowledge of the development of the middle ear, the nasal cavities, the face, and many other regions of the body.

But the reviewer goes further in stressing Prof. Frazer's adoption of that explanation of the foetal circulation which accepts mixture of the superior and inferior caval bloods in the right atrium, and Kellogg's work is quoted as evidence. It would be unfortunate if this interpretation were to be accepted by anatomists and clinicians either on the basis of Kellogg's work or because the anatomical arrangements of the foetal

heart seem to make it possible. Kellogg's investigations, for technical reasons, cannot be regarded as satisfactory, and the argument from gross structure to function is a dangerous one. In this, as in so many problems of embryology, the high court of appeal must be physiology, and those who have approached the problem from the physiological standpoint do not find the doctrine accepted by Prof. Frazer susceptible to interpretation in terms of their data. Sir Joseph Barcroft[1,2] and co-workers,[3,4] and Windle and Becker,[5] have shown that there is indisputable separation of the two blood streams in the foetal right atrium. The investigations of these workers, based on blood-gas analyses and direct inspection of the hearts of living mammalian embryos under optimum conditions, must be accepted. It remains a problem for the organogenists to find an anatomical basis for a satisfactory explanation of this physiological separation of these two blood streams.—I am, etc.,

Anatomy Department, London Hospital Medical College, Sept. 23. J. D. BOYD.

Large-scale X-ray Examinations

SIR,—The reflections contained in Sir Henry Bashford's letter (September 21, p. 395) deserve the careful consideration of all who are interested in this mass method of examination. I believe he has good ground for his fears, and Dr. E. L. Cooper in his article on this subject (August 24, p. 245) provides supporting evidence. He states: "It is customary to teach students that they are not to rely on the *x*-ray film for diagnosis, yet here we have discovered over thirty cases of tuberculosis, many with sputum or stomach contents containing tubercle bacilli, in which there are neither clinical symptoms nor physical signs of disease"; though he admits that "many of the men found to have pulmonary tuberculosis were under weight." What was the nature of the clinical examination which failed to reveal signs? He says: "The following cases are quoted as illustrating the value of routine radiography. One man serving in a medical unit was passed as 'Fit, Class I,' at two medical examinations. *X*-ray examination showed extensive chronic tuberculosis with large cavities in both lungs. The sputum contained tubercle bacilli. On being challenged he admitted that he had been under treatment for tuberculosis for the past three years." He explains the necessity for ordinary radiographic methods in all cases in which the miniature is suspicious. He acknowledges the familiar fact that radiographs may show appearances indistinguishable from pulmonary tuberculosis at one period and yet within a week or so subsequent radiographs may show that the suspicious shadows have disappeared. What, then, is the purpose and value of such mass surveys and the type of clinical examination which precedes them? If this inferior type of radiography is to be used to check such preliminary clinical examinations as are suggested, then there will still be a fair proportion of cases of pulmonary tuberculosis undetected.

It must be the experience of many clinicians, and of those radiologists who have examined serial radiographs of patients, that some cases of early pulmonary tuberculosis can be suspected from adequate clinical examination, and some in which the diagnosis can be confirmed by examination of the sputum before any signs of the disease can be detected with the best radiographic technique. I have confirmed this by the demonstration, in subsequent radiographs taken three to six months after, of the appearances of typical lesions at the site previously indicated by the clinician. I should estimate that at least as many cases are detectable by clinical methods at a stage when there are no recognizable radiographic signs as there are cases showing typical radiographic evidence but no clinical signs. Surely, therefore, the methods must be complementary and each must be thorough. I fear, however, that there is a marked tendency to-day to scamp the clinical examination and rely on the radiograph, and my opinion is that if the latter is to be carried out on a mass principle it will become as defective as the former. One senses, also, that there is a growing body of clinicians who, neglecting the clinical and psychological condition, treat the radiographic appearance of the patient rather than the former. Would not the introduction of the mass method of examination further contribute towards this outlook?—I am, etc.,

Birmingham, Sept. 23. JAMES F. BRAILSFORD.

SIR,—The central point of Sir Henry Bashford's letter (September 21, p. 395) is the different incidence of pulmonary tuberculosis as found by mass radiography—for example, at lowest 5.5 per 1,000 (Dr. E. L. Cooper's paper, August 24, p. 245)—and by clinical methods—for example, at the highest for the last twenty years of 1.9 per 1,000. These figures cannot be compared. The former represents the findings in a cross-section of the population at a given moment, while the latter is the annual figure for newly notified cases. Many of those discovered by routine radiography have doubtless been accumulating from previous years, and such a high figure would not be reached in subsequent years. As Sir Henry suggests, many of the cases discovered radiologically would no doubt recover without becoming clinically obvious. But those who are not so fortunate, as is well known, only too often are first recognized in an advanced stage of the disease. It is in the interests of this number that it is proposed to submit the whole group of radiological suspects to the very minor inconvenience of being investigated, watched, and, if necessary, treated.

These theoretical controversies are not very helpful. Present methods, as will be admitted by all, often fail to detect the early cases. Mass radiography offers an alternative which can discover these all-important cases. Surely the time has now come to concentrate on the practical difficulties of administering such large-scale schemes—difficulties that Sir Henry himself indicates on the radiological side and that Dr. H. B. Morgan, M.P., medical adviser to the T.U.C., has recently so forcefully described on the social and economic sides.—I am, etc.,

Harrow, Sept. 21. J. N. MORRIS.

Ether Convulsions

SIR,—Mr. Hamilton Bailey's[1] paper on ether convulsions has aroused the interest of several correspondents. All of them admit, however, that their cause is unknown. Dr. E. A. Pask (September 7, p. 337) and Mr. A. Dickson Wright (August 31, p. 299) agree that overheating of patients while under ether anaesthesia should be avoided. Mr. Bailey suggests that the water which heats the ether in the modern anaesthetic apparatus might sometimes become too hot (see also Fairley[2]). Mr. James Gore (September 7, p. 338) saw ether convulsions in the majority of cases with a strong toxic element, the cases often being in children with acute appendicitis who were also markedly dehydrated. Most cases have been mildly cyanosed before the onset of the convulsions, and the majority have been having a "semi-closed" type of anaesthetic such as is frequently given on the standard gas-and-oxygen machine. Mr. Gore believes that this type of anaesthesia throws greater strain on the cardio-respiratory system than does open ether with added oxygen in these predisposed patients.

Ether convulsions were already observed at a time when the anaesthetic machine was unknown.[3] Anderson[3] wrote a letter to the *Lancet* about "ether tremor," and described eight cases which occurred after "open" ether anaesthesia. The following explanations were suggested for the occurrence of convulsions: overdose of atropine,[4] anoxaemia,[5] impurities of ether,[6] impurities in the oxygen,[7] cerebral anaemia,[8] heat-stroke,[9] deficiency in carbon dioxide,[10] excess of carbon dioxide,[11] over-oxygenation,[12] idiosyncrasy,[13] shock,[14] and toxaemia.[15] Rosenow and Tovell[16] swabbed the nasopharynx of three patients with ether convulsions and isolated short-chained streptococci. Intravenous or intracerebral injection of the streptococci into rabbits produced convulsions, as did the injection of suspensions of material obtained by repeated washings of the nasopharynx; the symptoms developed by the rabbits were similar to those of the patients from whom the organisms were taken. Mousel[17] found a neurotrophic strain of streptococcus in the throat of a girl aged 10 with an appendix abscess who developed convulsions. A positive cutaneous reaction to a neurotrophic antiserum was also obtained. Mousel[18] reported another case of a child aged 6 who underwent several operations. Three anaesthetics

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[2] Idem, *The Brain and its Environment*, 1938, Yale Univ. Press.
[3] Barclay, A. E., Barcroft, J., Barron, D. H., and Franklin, K. J., *Brit. J. Radiol.*, 1939, **12**, 505.
[4] Barcroft, J., Barron, D. H., Cowie, A. T., and Forsham, P. H., *J. Physiol.*, 1940, **97**, 338.
[5] Windle, W. F., and Becker, B. F., *Anat. Rec.*, 1940, **77**, 417.

were uneventful, but the fourth produced a convulsion. At that time the streptococcus was isolated. A fifth anaesthetic was normal, and this time the streptococcus was not found. Rosenow and Tovell suggested that "ether convulsions are attributable to a neurotoxin produced by some strains of streptococci in amounts insufficient to cause spasms in the absence of anaesthesia, but which in the course of general anaesthesia suffice to incite the muscular spasms characteristic of this condition." Nothing, however, is known about the chemical nature of the neurotoxin.

These findings support the view that toxaemia probably plays a significant role in the production of convulsions. We should, therefore, endeavour to recognize its danger in time and make a careful selection of these susceptible patients before operation.—I am, etc.,

Department of Physiology, Middlesex Hospital, W.1. H. H. KWIATKOWSKI.

Sept. 25.

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[12] Corfield (1935). Ibid., **1**, 1052.
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Dosage of Barbiturate Anaesthetics

SIR,—In reply to Dr. Freda Pratt (September 21, p. 395) I am very sorry that I omitted to give the strength of the solution of pentothal that I used. It was 5%. I have used 10%, but I prefer the former. I should like to add that for wounded cases I am not in favour of small doses; 15–20 c.cm. of a 5% solution is the lowest dosage I employ, however trivial the wound. If less is given the patient is very apt to be restless afterwards, and this is most undesirable when a "rush is on." If the patient is sleeping peacefully the sister of the ward can then devote her whole time to the incoming wounded. If, however, 35 c.cm. or over is given the patient is usually very drowsy next day, and this acts as an excellent hypnotic for travelling in an Army ambulance if the C.C.S. has to evacuate daily.—I am, etc.,

R. HASTINGS MOORE,
Major, R.A.M.C.

Sept. 24.

Staphylococci in Lobar Pneumonia

SIR,—In your issue of September 21 (p. 399) Dr. B. R. Sandiford refers to the finding of the *Staphylococcus aureus* in "a peculiarly fulminating lobar pneumonia." During the twelve months March, 1938, to February, 1939, I saw six such cases, which I am elsewhere reporting in detail. They showed a very uniform picture. A young adult after a few days' mild upper respiratory infection became severely ill with intense cyanosis. Physical signs were scanty, a poor note and air entry at the bases with few accompaniments being the usual findings, but the illness was rapidly fatal in a day or two. At necropsy there was a haemorrhagic consolidation of the lungs with multiple foci of suppuration, and in addition a necrotizing tracheobronchitis. The *Staphylococcus aureus* was grown in pure culture from the lung lesions. There was no epidemic influenza about at the time these cases occurred.

Statistics suggest that the staphylococcus is responsible for 1% of primary pneumonias in adults, but clinical reports of cases are few. The textbook descriptions of staphylococcal pneumonia—for example, by Chickering in Cecil's *Medicine* (1937), and in Reimann's *Pneumonias* (1938)—do not emphasize one point that is clear from analysis of the reported cases: namely, that there are two types of staphylococcal pneumonia—a "benign" type with cavity formation and eventual recovery, and a "malignant" type with rapidly fatal course and a characteristic pathological picture of multiple small abscesses in the lungs. This "malignant" type occurs usually in association with virus influenza, but sporadic cases have been described. In children and infants staphylococcal lung infections often occur in epidemics.

In view of the small number of cases described in adults it would be of interest to have further details of the case mentioned by Dr. Sandiford, especially whether the clinical picture resembled a classical lobar pneumonia and whether there was any association with influenza.—I am, etc.,

RONALD MACKEITH, D.M.

St. James Hospital, S.W.12, Sept. 23.

Bile Peritonitis

SIR,—The interesting article on bile peritonitis by Mr. D. M. Douglas and Prof. G. Grey Turner (August 31, p. 280) prompts me to record the only case of this kind I have met.

The patient, a married woman aged 49, had a gall-stone "attack" in October, 1936. On the morning of December 26, 1936, there was severe pain in the gall-bladder region, with tenderness and some doubtful swelling. The gall-bladder could not be felt. Elsewhere the abdomen was normal. The condition was diagnosed as gall-stone colic with some cholecystitis. Morphine grain 1/4 at 2 p.m. gave partial relief, the pain never abating. It became very much worse about 4 a.m. on December 27, but I was not informed and did not see the patient until noon. She now looked extremely ill, with a weak rapid pulse, and temperature 98° F. The abdomen was very tender and rigid all over.

I operated at 4 p.m., the anaesthetic being chloroform and ether followed by ether. On opening the abdomen through a right rectus incision there was a very copious discharge of pure bile, coming mostly from the right flank. After swabbing the bile away a swelling about the size of an orange was found below the liver. As this swelling was obscuring the gall-bladder region it was broken up with the fingers and found to be a mass of inflamed omentum. The gall-bladder fossa was then exposed, but no trace of the gall-bladder was to be seen. In view of the patient's poor condition further examination was inadvisable, so a drainage tube was put to the right kidney pouch, and another to the pelvis through a stab wound below the umbilicus. More bile—and turbid fluid—welled up through the pelvic tube. Flakes of "lymph" were seen on some coils of intestine, the peritonitis being apparently confined to the right side of the abdomen and pelvis. The same evening the patient was very ill and seemed unlikely to live through the night. December 28: Still feels very ill. December 29: Feels "much better," after a fair night. Taking fluids well. Good result from enema. On each of these days she had rectal glucose salines; and pituitary extracts and coramine alternately every two hours.

Progress was good until January 12, 1937; on this and the next day there was rather severe haematemesis. (Gastro-enterostomy was done in 1918 by another surgeon, possibly for ulcer.) After this recovery was uninterrupted and the patient left hospital on February 12. Bile drained freely for four to five weeks after the operation. She has remained well apart from occasional attacks of bilious vomiting, which upset her for a day. Appetite, digestion, and nutrition are good.

Apparently this patient had an acute cholecystitis resulting in necrosis, rupture, and disappearance of the gall-bladder, followed by leakage of bile, at first localized, and later (about twelve hours before operation) spreading to the general peritoneal cavity. Although in this case there was, no doubt, infection of the gall-bladder, it seems clear that the very urgent symptoms following the "flooding" of the peritoneal cavity were due to the intensely irritant effect of the bile and that this is a chemical action, as Mr. Ivor Lewis suggests in the comment on his interesting case (*Journal*, September 21).

My patient was seen about eight hours after the "flooding" occurred, and my impression is that she was then much more gravely ill than would have been the case eight hours

after the perforation of a peptic ulcer. Bile leakage, therefore, even in a moderate amount, as in Mr. Lewis's case, appears to be an urgent abdominal catastrophe.

The note on the absorption of bile acids by Messrs. Rosenthal and Wislicki (*Journal*, September 21) is very instructive from the biochemical view, although it seems likely that the main factor in fatal cases is peritonitis and shock.

I remove the gall-bladder by stripping with wet gauze and do not cover over the fossa by suturing the peritoneal edges—which I believe is impossible in some cases—and have never seen any harm result. So I think what occurred in Mr. Lewis's case was just a bit of exceptional "bad luck."—I am, etc.,

Wakefield, Sept. 25. G. W. THOMAS, F.R.C.S.

Pathogenesis of Retinitis Pigmentosa

SIR,—In an annotation on the pathogenesis of retinitis pigmentosa (September 14, p. 361) you quote a raised blood cholesterol and a lowered temperature in this condition. In Dr. Levy-Wolff's papers no mention is made of the number of cases upon which these findings were based or the ranges of temperature which were found. Moreover, the lowered temperature is attributed to the physical properties of the cholesterol in the blood. So far as I know there is no hypothermia in the diseases in which the blood cholesterol is raised, even though it may be considerably higher than the figures given in this paper for cases of retinitis pigmentosa, and if this be true the theory advanced would appear untenable.

Of eleven cases which I was able to investigate I also found a raised blood cholesterol in four, but these were all examples of the Laurence–Moon–Biedl syndrome, one complete and three incomplete, but all with obesity. The blood cholesterol in these cases was not so high as the values found by Levy-Wolff (up to 380 mg. per 100 c.cm.), being between 200 and 260 mg. in the four cases mentioned above, and 175 and 185 mg. in the remainder.

In contrast to the results published in these papers I found no lowering of temperature taken four-hourly by the mouth over ten days in any of these patients; on the contrary, there were three cases of hyperthermia, one of which had a raised blood cholesterol. R. M. Stewart has two cases under his care intermediate between the syndromes of Kapuscínskí and Laurence–Moon–Biedl, which also show constant hyperthermia and a raised blood cholesterol.—I am, etc.,

Netherne Hospital, Surrey, Sept. 25. E. CUNNINGHAM DAX.

Intussusception

SIR,—Dr. Bruce Williamson (September 7, p. 320) says the key to early diagnosis of intussusception is repeated examination of the abdomen. I agree, but there is one sign which I have not seen mentioned in textbooks which is important as a pointer—namely, the facial aspect. I mentioned it to one of the physicians to the Children's Hospital here, and he told me there was a sister in one of the hospital's wards who claimed to be able to diagnose this trouble from the facial aspect of the child. I would not go so far as that, but it is striking enough to put one on the alert even where the only complaint is of a "sore belly." This sister said that a child with intussusception never smiles, but there is also a sunken condition of the eyes suggestive of hydrocephalus.

Thirty years ago I was called to see an infant of 9 months. It had been given a chocolate biscuit the previous evening, and had vomited several times during the night. It had had no pain and there was no crying. The first thing that struck me was the peculiar facial appearance, which by that time I had associated with intussusception. I examined the abdomen carefully, and could find nothing except that it was very soft and easily palpated. I told the mother that the sickness might be due to the chocolate biscuit, but that my reason for examining the abdomen so thoroughly was that it was possible there was an obstruction somewhere, though the absence of pain was rather against that view. I had occasion to speak to a surgeon who had operated on eleven cases of intussusception for me, and I told him about it. His answer was very definite: "There is no pain, therefore there is no intussusception. You can't diagnose intussusception from the facial aspect."

I watched the infant during that day, and the next morning on examination per rectum I got a smear of blood on my finger. I then took the infant into hospital, where my friend operated and found half an inch of ileum intussuscepted and adherent at the ileo-caecal valve. The child made a good recovery.

Twenty-five years ago I saw a girl of 5 years who had had intermittent colic during the night. When I saw her the mother said she thought the girl was all right again. I was at once struck by the child's appearance, but two examinations of the abdomen were negative. I made a third examination, and when my hand was over the right iliac fossa I felt a lump rising up under it. I sent the child into hospital, where she was found to have an intussusception. In forty-six years I have seen twenty-four cases of intussusception, all operated on except two, which were reduced with enemata. There were two deaths, but one of these was of a boy of 14 years who had been ill for three days before being seen.—I am, etc.,

Birmingham, Sept. 23 ROBERT ANDERSON, M.D.

Creatine in the Animal Economy

SIR,—I shall be grateful if you will permit me to point out that your article on creatine in the animal economy (September 21, p. 389) contains a number of misleading statements.

1. It is implied that muscle may contain 300–600 mg. of *creatinine* per 100 grammes, whereas it appears to contain very little creatinine and a large amount of creatine. It is likely that this error is merely typographical, but it is important.

2. It is stated that two groups of substances may give rise to creatine in the body. Guanidines and iminazols are instanced as members of one group, and amino-acids and urea as members of the other. The evidence on which this statement is based is that substances of these classes will produce increases in muscle creatine concentration and in creatine excretion in animals to which they are administered. The inadequacy of this type of evidence to establish the conclusion that the substances used have been transformed to creatine has been discussed in a recent paper.[1] Here it will suffice to point out that adrenaline produces both types of effect and that the increase in muscle creatine alone in rabbits may be more than 300 times the weight of adrenaline administered. In this instance there is no possible way in which the adrenaline can have given rise to more than an unimportant fraction of the extra creatine formed. This type of evidence, therefore, is merely evidence of a pharmacological stimulation of creatine synthesis, and gives no clue to the chemical stages involved in the process. The only satisfactory demonstration of creatine synthesis from a known precursor which has so far been provided has been described in papers by my colleagues and myself.[2,3] In this work it was shown that arginine, or glycocyamine plus an appropriate methylating agent, underwent transformation to creatine in the isolated rabbit heart. That the creatine synthesized was derived from the guanidine inducing the synthesis was established by showing that one gramme-molecule of the guanidine disappeared for every gramme-molecule of creatine appearing.

3. Despite this evidence, it is stated in your article that purines appear more likely to be precursors of creatine than guanidines. It is true that methylpurines induce increases in muscle creatine concentration and creatine excretion. Your leader writer appears to be unaware, however, of the bearing of the pharmacology of the methylpurines on the interpretation of this finding. In normal animals they are strongly sympathomimetic, whereas in adrenalectomized animals their sympathomimetic activity is absent—that is, they must be considered to excite an output of adrenaline from the suprarenals. It has already been pointed out that adrenaline stimulates creatine synthesis, but cannot be considered to be a precursor of the creatine synthesized. It follows that the nearest relation of the methylpurines to creatine synthesis is that they stimulate the production of a substance which stimulates the synthesis of creatine.

4. It is stated that the liver appears to be the main site of creatine formation, although the one clear demonstration of creatine synthesis has been obtained in the isolated heart. Work on liver slices, such as that of Borsook and Dubnoff,[4,5] is still incomplete. No attempts have been made to establish

lish the appropriate stoichiometric relation between the disappearance of the agent inducing the observed changes and the extra creatine apparently formed.

5. There is also an obscurity which I should like to be allowed to correct, in that phosphocreatine is mentioned in the first paragraph, and in the second paragraph creatine is stated to combine with phosphoric acid to form phosphogene. Apart from the fact that "phosphogene" is obviously a misprint for "phosphagen," it should perhaps be made clear that the two terms are intended to apply to the same substance; the substance in question, before knowledge of its chemical constitution permitted of calling it "phosphagen," was designated "phosphagen."—I am, etc.,

Oxford, Sept. 24. R. B. Fisher.

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Nurse Anaesthetists

Sir,—Recently a great deal of your valuable space has been taken up about nurse anaesthetists. The employment of nurses for this can be no other than a retrograde step. If really the medical staff mean to advocate this at Addenbrooke's Hospital then I hope I shall never be a patient there, and I venture to say that each one of them would not wish a nurse to give him an anaesthetic.

The art of anaesthesia is as much a special branch of medical work as any other. That does not, however, mean that no one but a specialist is to administer anaesthetics any more than a specialist surgeon alone is to use a knife. Those who advocate nurses giving anaesthetics have yet to explain why the teaching schools all over the world take special pains to teach medical students this subject and not nurses. They all have specialist anaesthetists to do so. Also why does the Royal College of Surgeons grant a special diploma in this subject? The surgeon is much happier if he knows he has a highly trained anaesthetist at his operation so he has nothing to worry about except his own work.—I am, etc.,

Chichester, Sept. 16. A. M. Barford.

Moses and Akhnaton

Sir,—In a review of Sir Richard Gregory's work *Religion in Science and Civilization* (September 14, p. 358) it is stated that Sir Richard adopts Freud's view that Mosaic monotheism originated with Akhnaton. To prove that Freud's view is wrong it is only necessary to state the historic fact that Moses was dead before Akhnaton was born. Moses was born about 1525 B.C. or, according to Sir Charles Marston, 1520. Prof. Garstang's excavation of Josue's Jerico established the fact that the Exodus took place between 1447 B.C. and 1437 B.C.—that is, during the first decade of the reign of Amenhotep II. The accepted dates of Akhnaton's reign are 1376–1358 B.C. This chronology Freud admits.

The modern study of archaeology and anthropology leads to the conclusion that monotheism was the original religion of Man. In Heliopolis, the biblical On, the earliest of all universities, there was a small select band of priests who believed in monotheism. It is an interesting speculation that they may have acquired their theology from Joseph, who married the daughter of a priest of the temple of the Sun in the city of On. Akhnaton's mother was a Syrian, and she may have taught monotheism to her illustrious son.—I am, etc.,

Kensington, W.14, Sept. 17. J. McNamara, M.D.

C. C. Ling, S. S. Taur, P. C. Heveh, and S. Y. Yang (*Chinese med. J.*, 1940, **57**, 11) record their observations on sternal puncture of thirty-eight cases of enteric fever, with simultaneous serial demonstrations of blood, urine, and stool cultures and the Widal reaction. They found that the infecting organism was cultured from the marrow in a higher percentage of cases than from the blood, and therefore recommend medullo-culture for routine investigation.

Obituary

J. J. M. SHAW, M.D., F.R.C.S.Ed.

The following record and appreciation supplements the tribute to Colonel J. J. M. Shaw published last week.

The incompleteness of the design of human life is even more evident than usual when one reads of the death of Colonel J. J. M. Shaw at the age of 54, of bacillary dysentery, on active service as consulting surgeon to the Army of the Middle East. For Shaw, after having towered above his contemporaries as a student—he was six feet three in height, president of the union, president of the athletic club (and a tennis blue), and a lieutenant in the university battery, of which, under him, membership in these days became a distinction—took a longer time than many to find his true *métier* and was blossoming late. Within a few weeks, just before entering the Army, he had been appointed full surgeon to the Edinburgh Royal Infirmary, nominated Lord Rector's Assessor on the University Court—a rare if not a unique honour for a surgeon—and elected to the Athenaeum Club in London. He had a substantial and increasing reputation as a surgeon and teacher of surgery in Edinburgh, but it was as an organizer and a committeeman that he shone; his opinion was often sought and was always sensible, his statements were clear and unprejudiced, and his manner—in private as in public—impressive. He was the sort of man who in due time would have made an excellent principal of a university, and many of his friends regretted that one or other of the Scottish universities had not, in the course of comparatively recent changes, made him a professor of surgery, for he had been the late Sir David Wilkie's senior assistant for some years. The reason no doubt was to be found in his somewhat unorthodox career as a surgeon, for Shaw qualified in 1909, was Sir Thomas Fraser's house-physician at the Royal Infirmary, and then joined the L.C.C. mental hospitals service.

He was in the Special Reserve, R.A.M.C., and the outbreak of war in 1914 took him to a casualty clearing station in France, where he developed a considerable reputation as a surgical specialist, publishing one of the early articles on the treatment of gunshot wounds of the abdomen, and was awarded the Military Cross. Eventually he became surgeon to the Queen's Hospital for Facial Injuries at Sidcup, and then returned to Edinburgh to do orthopaedic and plastic surgery under the Ministry of Pensions. He took the F.R.C.S.Ed. in 1921 and was appointed assistant surgeon to the Edinburgh Royal Infirmary and surgeon to Leith Hospital. Shaw's interest in orthopaedic and plastic surgery diminished on his return to civil life, and he gradually became a leading authority on cancer and modern methods of dealing with it. He formed and became chairman of the Cancer Control Organization for South-East Scotland, which he organized on the Swedish model, with a foolproof follow-up system and the payment of patients' fares to make them attend regularly. He made a particular study of radium in relation to cancer and was a member of the National Radium Commission and surgeon in charge of the Beechmount (Radium) Annexe of the Edinburgh Royal Infirmary.

Shaw was greatly interested in the welfare of the Edinburgh students; for many years he was a graduate member of the committee of the university union, and he served on the committees of the University Settlement, the University Athletic Club, and the University Graduates' Association, being acting president of the last. Altogether he lived a full and useful life, undertaking the responsibilities of a citizen as well as those of a surgeon, and all who knew him mourn his untimely death. Colonel Shaw leaves a widow, three sons, and a daughter.

R. S. S.

Dr. Randolph Lea Grosvenor, who was killed recently by enemy action, together with members of his household, was the son of George Fox Grosvenor, M.D., a London practitioner, and from Westminster School went to study medicine at Clare College, Cambridge, and afterwards at St. Mary's

Hospital, where he won a prize in dermatology. He graduated M.A. and took the M.R.C.S. and L.R.C.P. diplomas in 1896, and then set up in general practice in Chelsea, and for some years was honorary anaesthetist to the Victoria Hospital for Children in Tite Street and clinical assistant at the Chelsea Hospital for Women. During the last war Dr. Randolph Grosvenor was honorary physician for war refugees at Crosby Hall, and for his services to Belgian subjects he received King Albert's medal with bar. He held the position of medical adviser to the Estonian Legation, and in former years had been consulting medical officer to the National Telephone Company. He joined the British Medical Association in 1913, and was an active member of the Chelsea Clinical Society and the Harveian Society.

E.M.S. PATHOLOGICAL LABORATORIES

In the early months of the war it was decided that certain pathological laboratories, since known as "designated" laboratories, which were to serve a group of hospitals, should be under the direct control of the Ministry of Health through the Sector Pathologists, the staff being paid either by the parent hospital or by the Ministry, and the expenditure generally being a direct charge on the Exchequer. It has now been decided that where a laboratory is attached to an E.M.S. hospital the authority of the latter should be responsible as from October 1, 1940, for the management of it, for the payment of salaries other than those of the medical staff enrolled in the E.M.S. and for other running costs in exactly the same way as it is responsible for the management and cost of maintaining E.M.S. beds. The Ministry and the authorities of "inner" hospitals will transfer to "outer" hospitals particulars of the staff they have been paying, and the authorities of the "outer" hospitals will continue to pay the same salaries as the staff have hitherto been receiving, the expenditure being recognized by the Minister as properly incurred under the scheme. Superannuation contributions will continue to be paid by the parent hospital. Laboratory expenses due to the scheme—that is, the net expenditure after deducting fees for examinations for private practitioners, for other hospitals using the laboratory, and for the hospital's own civilian patients—will be repaid by the Ministry. A circular states that private practitioners submitting occasional specimens for examination should be charged at a rate not less than that prescribed by the British Medical Association, but hospitals using the laboratory should be charged at the flat rate of 3s. per specimen without distinction between different types of examination, no charge being made for E.M.S. cases. Items of capital expenditure not exceeding £5 and approved by the Sector Pathologist may be incurred without the approval of the Ministry. Hospital authorities are asked to ensure that requests of Sector Pathologists for alterations in staffing or in the use to be made of laboratories are carried out with a minimum of delay unless there is some serious objection to such alterations. Any difficulties should be discussed in the first instance with the Sector Pathologist, and, if agreement is not reached, should be referred to the Ministry.

MEDICAL DEFENCE UNION

The fifty-fifth annual meeting of the Medical Defence Union was held at 49, Bedford Square, W.C.1, on September 24, Mr. E. D. Davis presiding. Presenting the annual report Mr. Davis drew attention to the fact that the Union had added to its register the largest number of members in any year in its existence, and emphasized that the work of the Union had continued in spite of the difficulties caused by the war. The recent bombing of London by day and night was held by the chairman to justify the transfer of the office to a neutral area. Reference was made to the distinguished service rendered to the Union by the late president, Rear-Admiral E. Pearce Gould, and to the loss the Union had sustained by his death. The report and the statement of accounts were adopted, and Dr. H. Robinson, Miss Bolton, Mr. Davis, and Colonel Buxton were elected members of council for the ensuing year. At the subsequent meeting of the elected members of council Colonel St. J. D. Buxton was elected president of the Union for the year 1940-1.

The Services

ARMY AWARDS

The O.B.E. (Military Division) has been awarded to Major Ralph Brooke, R.A.M.C.(T.A.), for gallant and distinguished services in action in connexion with the operations in Norway; and the M.C. to Lieuts. Albert Eric Cooper and Hampton Atkinson Dougan, R.A.M.C., for gallant and distinguished services in the field.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Missing

Surgeon Lieut. Frank Hanson Williams, R.N.

Wounded or Injured

Surgeon Lieut.-Commander Dudley Plunket Guid, R.N.

ROYAL ARMY MEDICAL CORPS

Prisoners of War

Major Benjamin Brian Hosford, R.A.M.C.
Captain Philip Tyndale Cooper, R.A.M.C.
Captain (War Substantive) James Clark Cameron, R.A.M.C.
Lieut. Anthony Ferrier Stallard, R.A.M.C.
Lieut. James Ross Sinclair Third, R.A.M.C.
Lieut. Douglas George Howatson, R.A.M.C.
Lieut. Alexander Robert Taylor Lundie, R.A.M.C.
Lieut. Francis Robert Raby Martin, R.A.M.C.

Medical News

The Royal College of Physicians announces that the Harveian Oration, the Bradshaw, FitzPatrick, and Lumleian Lectures for 1940 have been postponed.

The eighteenth Norman Kerr Memorial Lecture will be delivered by Sir Arthur Hurst before the Society for the Study of Inebriety in Friends House, Euston Road, N.W., on Tuesday, October 8, at 4 p.m. His subject is "Alcohol and the Organs of Digestion."

In consequence of the war, it has been decided to postpone, for the present, the Chadwick Public Lectures which were to have been delivered this autumn. Due notice will be given when the lectures are to be resumed.

We are asked to state that the Charterhouse Rheumatism Clinic is again giving treatment to patients and expects to be in full working order within the next week.

The meeting of the Society of Public Analysts and Other Analytical Chemists which would normally have been held on October 2 was cancelled. Regarding the holding of the November and subsequent meetings the council or its emergency committee will decide later. Members will receive due notice of meetings which are to be held, but notices of cancellation will not be sent.

A cable in the *Times* of September 26 records a ceremony held in the British Embassy at Buenos Aires when the degree of Doctor *honoris causa* of the University of Oxford was conferred by special authority upon Dr. Mariano R. Castex, professor of clinical medicine in the National University of Buenos Aires.

Mr. G. R. Girdlestone, formerly Nuffield Professor of Orthopaedic Surgery at Oxford, has accepted an appointment as honorary consulting orthopaedic surgeon to the Ministry of Pensions.

The need at the present time for special care to ensure the cleanliness of milk supplies is the subject of a recent Ministry of Information news bulletin summarized in the *Times*. Once again the public is urged to boil all milk that has not been pasteurized or sterilized. The same note points out that among public health measures being taken at this time are an extension of the system of chlorination of water, the establishment of emergency public health laboratories to assist in the event of any outbreak of infectious disease, and the provision of stocks of substances necessary for the prevention and cure of disease. The effect on public health of troop movements and evacuation is being very carefully watched.

Sir Beachcroft Towse, the blind V.C. and chairman of the National Institute for the Blind, has received from Lord Nuffield a cheque for £10,000 to help newly blinded persons and their dependants. In a letter which appears on page 469 Sir Beachcroft asks readers to notify the National Institute of any men, women, or children whose sight may be injured in air raids. Arrangements have been made to give specialized training to these people.

At the recent quarterly meeting of governors of Westminster Hospital the secretary stated that the hospital had then a total of 117 patients compared with 300 a fortnight earlier. It appeared difficult to reduce the number further without incurring hardship. Out-patient departments, radium, *x*-ray, and physiotherapy centres continued to give full service. He paid a high tribute to the work done "during these tragic nights" by a small band of medical officers and dressers, and this praise was endorsed by a resolution of the governors. "I am satisfied," he said, "that never before has there existed an organization able to receive at a moment's notice large numbers of the wounded, carefully examine them, distribute them, and deal with their injuries so promptly and efficiently." This service had been commented upon with profound gratitude by many of the air-raid victims. The Westminster had undertaken the treatment of out-patients of St. Thomas's Hospital, and was assisting in every possible way to deal with cases where hospital treatment was essential.

Colonel Sir Thomas Dunhill, consulting surgeon to the Australian Imperial Forces, formally received in London on September 30 two ambulances given by the people of Southampton and by the people of Hull respectively, which are to be used at an Australian military hospital in the South of England.

The Union of South Africa Government has appointed a special war emergency subcommittee of the National Nutrition Council to investigate and report to the Minister of Public Health on all matters relating to the prevention of malnutrition and the general improvement of diet in South Africa.

A new Civil Defence Order requires men who are employed full-time in the first-aid post and ambulance services to continue in that employment until their services are dispensed with. Men aged 30 and over will not be called for military service during the current year. The officer in charge of the services, who will normally be the medical officer of health, will decide whether any person's services are no longer required.

Dr. Arthur Quinton Wells has been appointed medical secretary to the Medical Advisory Council of the Nuffield Provincial Hospitals Trust, which has its headquarters at Oxford. Dr. Wells is associated with the Sir William Dunn School of Pathology in the University of Oxford, and is the author of a number of medical publications.

Dr. Philip E. Smith, professor of anatomy at the College of Physicians and Surgeons of Columbia University, was recently awarded the Charles Micker Fellowship of the University of Toronto in recognition of his work on the pituitary gland.

Dr. Ludvig Hektoen, emeritus professor of pathology, University of Chicago, and since 1937 director of the National Cancer Council of the U.S. Public Health Service, has been made an honorary doctor of science of Chicago University.

The William Adam Jolly Fund for Research in Physiology, started in 1938 by past students, friends, and medical colleagues of the late Professor Jolly on his retirement from the chair of physiology in the University of Capetown, has been placed in the hands of the university, and will be administered by a committee to commemorate his services to the university, to the medical profession, and to the cause of scientific research in South Africa.

An anti-diabetic institute has recently been founded at Coimbre (Portugal) in connexion with the clinics of the University.

A bullet-deflecting breastplate, the invention of Mr. Charles Kingstone of Toronto, has been offered to the Department of National Defence, Ottawa.

No. 36

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 7, 1940.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1940					1939 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	107	9	39	2	1	16	2	7	—	2
Deaths		1	1				—	—		
Diphtheria	929	38	350	30	34	782	33	231	31	23
Deaths	36	—	9	—	2	19	—	3	3	1
Dysentery	57	4	57	—	—	19	1	22	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	2	—	1	—	—	1	—	—	—	—
Deaths		—	1				—	—		
Enteric (typhoid and paratyphoid) fever	126	4	18	3	—	77	6	8	5	2
Deaths		—	—	—	—	2	—	—	—	—
Erysipelas		16	42	6	4			42	6	3
Deaths		—	1				—	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	46	7	13	10	9	43	4	24	12	10
Measles*	5,949	140	362		26			13		3
Deaths	8	—	1	1	—	2	—	—	—	—
Ophthalmia neonatorum	93	4	16		—	78	7	25		—
Deaths										
Pneumonia, influenzal†	371	30	3		4	237	18	3		4
Deaths (from influenza)	11	—	1	—	1	5	1	1	—	—
Pneumonia, primary			117	4				78	5	
Deaths‡		20		7	6		11		9	4
Polio-encephalitis, acute	4	—	—			1	—			
Deaths		—					—			
Poliomyelitis, acute	42	2	3		1	30	—	1		1
Deaths		—	—				—	—		
Puerperal fever	2	2	13	1	—	3	3	7	2	1
Deaths							1§			
Puerperal pyrexia	148	11	20		—	163	14	13		2
Deaths										
Relapsing fever	1	—			—	—	—			—
Deaths										
Scarlet fever	1,449	54	163	29	32	1,106	57	179	39	63
Deaths	1	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough*	1,055	12	78		28			27		1
Deaths	2	—	1	1	1	8	2	3	1	—
Deaths (0-1 year)	315	41	52	22	16	277	26	51	30	20
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,576	801	504	157	115	4,128	678	544	190	112
Annual death rate (per 1,000 persons living)			10.2	10.5	10.1			11.0	12.8	9.8
Live births	5,436	801	797	259	219	6,467	905	788	427	210
Annual rate per 1,000 persons living			16.1	17.3	19.2			15.9	28.7	18.4
Stillbirths	207	20	28			223	20	34		
Rate per 1,000 total births (including stillborn)			34					41		

* Made notifiable on November 1, 1939.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Since January 1, 1940, figures for London (b) have been for deaths from all forms of pneumonia; the corresponding figures for 1939 relate to deaths from lobar pneumonia only.

§ Death from puerperal sepsis.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

In England and Wales there has been a rise compared with the previous week in the incidence of the principal notifiable diseases, with the exception of cerebrospinal fever, but only in respect of scarlet fever has the increase been considerable. Notifications of all these diseases, including cerebrospinal fever, are in excess of those for the corresponding week of 1939; although exact data for last year are not available it is probable that the incidence of both measles and whooping-cough is also greater; in Scotland the incidence of these two diseases is higher compared with the previous year.

Enteric Fever

Although twenty-nine of the sixty-one administrative health areas in England and Wales record notifications of enteric, more than half the total occurred in the counties of Lancaster and Northumberland, in both of which the disease has been prevalent recently. Details of notifications in the areas chiefly involved are: Northumberland 39 (Newcastle-upon-Tyne 2, Berwick-upon-Tweed M.B. 32, Newbiggin-by-the-Sea U.D. 4, Newburn U.D. 1); Lancaster 28 (Blackburn 2, Bolton 5, Burnley 1, Liverpool 1, Manchester 3, municipal boroughs of Chorley 2, Farnworth 2, Lancaster 2, Leigh 1, Morecambe and Heysham 1, and Swinton and Pendlebury 2, the urban districts of Standish with Langtree 1, Turton 2, and the rural districts of Clitheroe 2, and Chorley 1); Devon 7 (Exeter 1, Plymouth 2, and the rural districts of Tiverton and St. Thomas 2 each); Durham 7 (Gateshead 2, Sunderland 1, Whickham U.D. 4); Salop 6, all in Shrewsbury; Surrey 6 (Croydon 1, Banstead U.D.1, Kingston-upon-Thames M.B. 1, Wimbledon M.B. 2, Guildford R.D. 1); London 4, in the boroughs of Camberwell, Hammersmith, Holborn, and Shoreditch.

The Minister of Health, in a recent statement in the House of Commons on the prevalence of the disease in Lancashire, said: "During the first eight months of this year 233 cases of enteric fever have been notified in Lancashire. The disease is mainly paratyphoid fever. There have been a number of outbreaks, but none of them considerable. The largest numbers have been in Liverpool, Manchester, Chadderton, Farnworth, and Bolton. In spite of careful investigations the exact sources of the outbreaks have not been traced, but there is little doubt that the causes of infection were articles of food contaminated either by a carrier or an ambulant person suffering from the disease. There is no evidence that infection has been conveyed by water or milk or associated with changes in population. The incidence of enteric fever in Lancashire has not been greater than in the country as a whole."

Scarlet Fever

In contrast with enteric fever, the incidence of scarlet fever is widespread and involves rural and urban districts almost as heavily as densely populated centres in relation to the numbers at risk. The counties chiefly affected were: Lancaster 171 (Bolton 10, Liverpool 21, Manchester 21, Salford 14, Swinton and Pendlebury M.B. 9); Yorks, West Riding, 128 (Bradford 14, Doncaster 13, Leeds 11, Sheffield 9, York 11); Warwick 84 (Birmingham 56, Coventry 10); Middlesex 69 (Hendon M.B. 14, Harrow U.D. 7); Stafford 68 (West Bromwich 10, Wolverhampton 9); London 54, in no borough more than 5 cases each; Essex 49 (East Ham 7, West Ham 4, Dagenham M.B. 8); Gloucester 48 (Bristol 25, Gloucester 4, Sodbury R.D. 4).

M. D. M. Nicoulaud (*Thèse de Paris*, 1940, No. 195), who records eight cases, one of which is original, in patients aged from 37 to 61, states that caisson disease in workmen who have been subjected to high pressures for several years may be manifested in the form of arthritis of the hips, which can be demonstrated by radiological examination. The clinical symptoms of the arthritis consist in intolerable pain radiating to the knee-joint, while *x*-ray examination shows flattening of the head of the femur, necrosis of bone, and zones of hypercalcification accompanied by zones of hypocalcification in the head of the femur and acetabulum.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Hyperpiesia

Dr. HUGH WATSON (Beragh, Co. Tyrone) writes: I wonder if I could get any assistance with a patient of mine through the medium of the *British Medical Journal*. The patient is aged 59 years—female, menarche at 50. For the past nine years she has had hyperpiesia without any symptoms apart from spasmodic torticollis, which may or may not be related. She came under my care four years ago, and I found her to weigh 14 stone and her blood pressure was 240/120. I have tried her on diet, alkaline mixture, theominal, raminal, and stilboestrol without any results. At the moment, after eight weeks in bed, the systolic pressure is over 300, although diastolic pressure has remained at 120. I do not advise blood-letting, and I should add that she has no albumin or other manifestation of blood pressure. There is still very little in the way of cardiac enlargement. Perhaps some of your readers could assist me by some suggestions.

Defect of Micturition

"DRYDEN" writes: In reply to "Puzzled" (August 31, p. 306) I think there are two procedures which may be helpful, whatever the cause of the dribbling may be. The first is to express the last drops from the urethra by pressing the hand up into the fork and compressing the posterior urethra. The second is to carry squares of white lint, measuring two inches by three, in the pocket and drying the end of the urethra each time.

Questions about Drowning

Mr. REGINALD T. PAYNE, M.S., F.R.C.S. (London, W.1), writes: In reply to the inquiry by "Hove" in your issue of September 21 (p. 404) a full account of drowning under experimental conditions is given by F. G. Banting *et al.* in the *Canadian Medical Association Journal* of September 9, 1938 (**39**, 226). In one type a considerable amount of water enters the lungs. But in the other type, although the main features of drowning are similar, very little water gets into the lungs owing to spasm of the glottis, and death is asphyxial. In these cases the blood pressure falls more gradually, and the pulse rate falls to about 10 to 15 per minute. Later the ventricular complexes disappear, although the auricular complexes may persist for thirty to forty-five minutes after apparent death. This experimental evidence forms part of the basis of my plea for immediate, prolonged, and persistent artificial respiration in my article on the treatment of drowning and electrocution in your issue of May 18, 1940.

Difficulties after Suprapubic Cystotomy

"W. F. C." writes in reply to "H. B." (September 14, p. 372): One trouble is that the connecting piece from the drainage tube to the bag is too small for its work. It gets furred up with crystals anyhow. But the urine contains masses of mucus, often large and stringy. These masses fill up the slits in a de Pezzer tube or block up the small hole in the connecting piece. Therefore I always use a wide-bore glass tube for connecting. This can be taken out, treated with acid, boiled, etc. There is no danger of fracture; and anyhow it can be obviated by wrapping the glass in material. There is a valve in the bag, and this gets blocked. I do not see the necessity for this valve; but if the connector is wide the valve does not matter much. That the drainage tube gets blocked is shown by the fact that the urine sometimes escapes and wets the abdomen. Then I either use an open tube or cut off the end of the de Pezzer. The tube can be kept in position quite well. A dodge is to take a piece of wide tube, open at both ends. Make a small hole about six inches from one end. Insert some tube about the size of a No. 8 catheter, but as thick-walled as possible, and projecting beyond the end of the wide tube. This can be fixed in position

with cycle repair outfit by punching a small hole in a patch and slipping it over the narrow tube, etc. The irrigation tube can be introduced continuously through the narrow tube, and the wide tube effects drainage. Pressure according to the length and height of the narrow tube.

Black Hairy Tongue

"BETA" writes in reply to the query published on September 14: I have seen two cases of black hairy tongue, both of which cleared up rapidly when the patient placed a tablet of sodium salicylate on the patch and rubbed it against the roof of his mouth. This should be done five to six times a day for one week.

Bromidrosis of the Feet

"A. D." asks for suggestions in the treatment of perspiring feet with a nasty odour.

*** Detailed advice on the treatment of excessive sweating of the feet and the offensive smell of decomposing sweat is given in textbooks of dermatology and in the chapter on bromidrosis in the *British Encyclopaedia of Medical Practice*.

Morphine Tolerance

Dr. ROBT. D. CAMPBELL (Kirriemuir) writes: A discussion with a somewhat sceptical friend has led me to put on record the following case of tolerance to large doses of morphine administered hypodermically. The patient was a man of about 55, above average height, and powerfully built. He had a neoplasm in the right kidney with metastases in the spine and elsewhere, complete paralysis of both legs, and incontinence of bladder and bowel. He complained of excruciating pain in the lower part of the back and in the legs. Morphine was first given on April 14, 1934. I have asked the chemist to let me have a note of the quantities of morphine sulphate supplied during the last two or three weeks of the patient's illness. Each tablet contained 1 grain of the sulphate and the number of tablets supplied was as follows: August 3, 1934, 360; August 9, 1934, 360; August 14, 1934, 360; August 20, 1934, 360; August 27, 1934, 360; September 6, 1934, 360; September 17, 1934, 360; September 18, 1934, 288. In these weeks he was getting an average of 60 grains per day, 12 grains every four or five hours. It required the use of a 5-c.cm. syringe to get the quantity in solution. I wonder if there are many instances of larger quantities being tolerated.

Income Tax

Cost of Air Raid Shelter

"K." has erected an air raid shelter in his garden at a cost of £270. Can he claim any allowance against his professional earnings?

*** No; the expenditure represents capital outlay, and as such is not admissible. (Expenditure on such items as covering windows with wire-netting, providing black-out material, etc., for the waiting room and surgery, is, we believe, allowed as a concession.)

Cost of Instruments

"LIEUT.-COLONEL" started practice last December after retiring from one of the Forces. Recently he spent £100 on the purchase of some instruments. Is this a deductible expense?

*** No. The cost of *replacement* of equipment used in the practice is deductible, but the cost of the initial equipment (or *pro tanto* the cost of improving it) is capital outlay and is not admissible.

Locumtenent: Board and Lodging

"DELTA" has made a declaration of his cash earnings as a locumtenent but has been assessed in excess of the amount shown, apparently because one of the practitioners by whom he was engaged added to the amount of the cash payment his estimate of the value of the board and lodging provided.

*** The value of the board and lodging is not chargeable as income of the locumtenent, though the practitioner can deduct its cost as an expense. We think that if "Delta" explains the facts to the local inspector of taxes the assessment will be adjusted without further trouble.

Partners Serving in the Forces

"A C." explains that two of the three partners are in receipt of Army pay, and inquires whether those earnings cannot be pooled with the general practice earnings, thereby avoiding some complications in the assessments.

*** No. Army pay of officers is assessable by the War Office Commissioners and therefore cannot properly be included in an assessment on civil earnings. In the circumstances the method of assessment and the basis of division of the liability among the partners, as suggested by the inspector of taxes, appear to be correct. (Incidentally the operation of the previous year's basis as regards the partner serving in the T.F. will reduce the tax payable as compared with the "pooling" basis.)

LETTERS, NOTES, ETC.

Alternative to Oiled Silk

Dr. W HUTTON SCOBIE (Tywardreath, Cornwall) writes: For wet dressings I have found that pieces of inner tube from motor-car wheels are an excellent substitute for oiled silk. The rubber has a curve in its composition which enables it to fit snugly over the limb. The exact fitting renders the dressing comfortable, which remains wet indefinitely. The portions of tyre can be boiled and used repeatedly.

First-aid Lectures and Examinations

COUNTY MEDICAL OFFICER, B.R.C.S., writes: Evidently there are other medical men who agree with me that the present method of lecturing and examining by the "bodies concerned" is unsatisfactory. I entirely agree with Drs. H. Dundas McCall and H. Rosenberg (September 14, p. 366). For the second and subsequent examinations I think that a written paper should be required and that it should be corrected by someone on a selected panel of examiners. It needs a great deal of moral courage to "spin" Lady Blank or perhaps the Squire's wife, who is possibly Commandant of the local detachment, even if after writing a lot about mustard gas she finishes up by saying, "It is never safe to take a lighted candle near gas." (This has actually happened.) In a recent examination which I conducted for the B.R.C.S. I found that some candidates for the second or third time knew less than some who were up for the first time. For the higher certificates or proficiency badges I consider that a real knowledge of the subject should be demanded, and that it is not fair to ask the local doctor to "spin" his best patients.

Rheumatism and Wasp Stings

Dr. FRANCIS DUDLEY (Devon) writes: As a sufferer from rheumatism the theory that formic acid injected by bees, etc., acts as a prophylactic has interested me, though I know of no case so treated. Recent stirring times in this neighbourhood rendered necessary the repair of my scullery roof. This was held up because wasps had selected the space between the slates and the ceiling as a suitable residence. Inadequately protected, as it turned out, I proceeded to remove the slates, exposing an outsize in nests, which in about an hour I completely demolished, sustaining in the process some eighty to one hundred injections on the face, neck, hands, wrists, and forearms. About twenty operators left their "needles" behind. This I have always experienced with bees, but not before with wasps. I should not have so lightly undertaken this task had I not known that single stings have never inconvenienced me. However, this mass attack caused me acute discomfort for some hours, steadily diminishing, till next day it disappeared, to give place to itching, which became more intense as time passed, especially at the spots where stings were left behind. This irritation was greatest after three days, and even now, eight days since injections, it is still noticeable. During this last week-end break in the weather my rheumatic symptoms have been much less than usual. This may be coincidence, or wishful thinking—but a similar urgency must arise before I should again submit to such treatment from the *Vespa vulgaris* or even the *Apis mellifica*.

Missionary Medicine

Under the heading of "Triumphs of Healing in a World of War" the Church Missionary Society has issued a short popular report of its medical work. This gives a description of the medical services which continue to be carried out in China, a country that has suffered from a war even more ghastly in some respects than that of Europe. A tribute is paid to the courageous acceptance of danger and emergency conditions by the Chinese staff in C.M.S. hospitals subjected to air attack. It is mentioned that the Chinese Government in building up its new scheme of public health has shown itself anxious to work in close co-operation with the mission hospitals. It has laid great stress on the importance of midwifery, particularly at this time, and this branch of the work figures prominently in the reports from the C.M.S. hospitals this year. An account is also given of the work in India, where the medical service is proceeding on the lines of prevention as well as cure.

Filter Tips as Ear Plugs

MR. A. S. ANDERSON writes: Regarding "rizla" filter tips advocated as ear plugs (September 28, p. 436), I think it will be found that the actual makers and suppliers are in the telephone directory as Rizla Cigarette Paper Manufacturers of Beresford Avenue, Wembley.